



EXPEDUCOM

A HANDBOOK ON EXPERIENTIAL EDUCATION.

PEDAGOGICAL GUIDELINES FOR TEACHERS AND PARENTS

Erasmus+ Project:

Experiential Education Competence
(teaching children aged 3-12) – EXPEDUCOM

The grant reference number:
2014-1-LT01-KA200-000368

Editors:

Gianina-Ana MASSARI
Florentina-Manuela MIRON
Violeta KAMANTAUSKIENE
Zeynep ALAT
Cristina MESQUITA
Marina TZAKOSTA
Jan Karel VERHEIJ
Tija ZIRINA

EDITURA UNIVERSITĂȚII "ALEXANDRU IOAN CUZA" DIN IAȘI

Editors:

Gianina-Ana MASSARI
Florentina-Manuela MIRON
Violeta KAMANTAUSKIENE
Zeynep ALAT
Cristina MESQUITA
Marina TZAKOSTA
Jan Karel VERHEIJ
Tija ZIRINA

**A HANDBOOK ON
EXPERIENTIAL EDUCATION.
PEDAGOGICAL GUIDELINES FOR TEACHERS
AND PARENTS**



2016

EDITURA UNIVERSITĂȚII "ALEXANDRU IOAN CUZA" DIN IAȘI

Gianina-Ana MASSARI
Florentina-Manuela MIRON
Violeta KAMANTAUSKIENE
Zeynep ALAT
Cristina MESQUITA
Marina TZAKOSTA
Jan Karel VERHEIJ
Tija ZIRINA

Erasmus+

Project Title:

**Experiential Education Competence (teaching children
aged 3-12) EXPEDUCOM**

The grant reference number: 2014-1-LT01-KA200-000368

Descrierea CIP a Bibliotecii Naționale a României:

**MASSARI, Gianina-Ana, MIRON, Florentina-Manuela,
Violeta KAMANTAUSKIENE**

**A Handbook on Experiential Education. Pedagogical
Guidelines for Teachers and Parents / Gianina-Ana
Massari; - Iași: Editura Universității Alexandru Ioan
Cuza din Iași, 2016**

ISBN 978-606-714-309-6

HANDBOOK CONTENTS

Foreword (<i>Violeta Kamantauskiene</i>)	7
PART A.	9
GENERAL FRAMEWORK ON EXPERIENTIAL LEARNING	
CHAPTER 1. WHAT IS EXPERIENTIAL LEARNING?	10
(<i>Gianina-Ana Massari, Manuela-Florentina Miron</i>)	
1.1. Concept	12
1.2. Characteristics of experiential based learning	14
1.3. The principals of experiential orientation	17
1.4. Experiential based learning stages	18
1.5. Teacher roles	19
1.6. Children roles	20
1.7. Integration of experiential learning in teaching	20
CHAPTER 2. OVERVIEW OF CONCEPTUAL FOUNDATIONS ON THE EXPERIENTIAL BASED LEARNING	22
(<i>Gianina-Ana Massari, Cristina Mesquita, Rosa Novo</i>)	
2.1. Instructional models for the experiential learning theory	22
(<i>Gianina-Ana Massari</i>)	
2.2. Dewey's foundations for the Experiential Based Learning	26
(<i>Cristina Mesquita</i>)	
2.3. Implications of Vygotsky's ideas on learning process	30
(<i>Gianina-Ana Massari</i>)	
2.4. Bruner's conceptual contribution to the experiential based learning	32
(<i>Cristina Mesquita</i>)	
2.5. The Jean Piaget's perspective	35
(<i>Rosa Novo</i>)	
2.6. Kolb's experiential learning theory	37
(<i>Gianina-Ana Massari</i>)	
CHAPTER 3. CITIZENSHIP AND 21ST CENTURY EDUCATION	39
(<i>Jan Karel Verheij, Frank van Herwaarden, Gerben de Vries</i>)	
3.1. An overview of 21 st century skills education	39
(<i>Jan Karel Verheij, Frank van Herwaarden</i>)	
3.2. What kind of citizens are needed in the Netherlands in the 21st century?	47
(<i>Gerben de Vries</i>)	
CHAPTER 4. DIFFERENT APPROACHES OF EXPERIENTIAL EDUCATION	62
(<i>Marina Tzakosta, Cristina Mesquita, Rosa Novo</i>)	
4.1. Reggio Emilia Approach	62
(<i>Marina Tzakosta</i>)	

4.2. High Scope Approach (<i>Cristina Mesquita</i>)	65
4.3. Perspective of the Modern School Movement (<i>Rosa Novo</i>).....	70

PART B. RESEARCH REPORT SURVEY.....	73
Chapter 5. INTERNATIONAL RESEARCH REPORT ON EXPERIENTIAL LEARNING APPROACHES	74

PART C. EXAMPLES OF EXPERIENTIAL BASED LEARNING DEVELOPED IN DIFFERENT COUNTRIES	112
---	------------

CHAPTER 6. CASE STUDIES ON EXPERIENTIAL EDUCATION IN KINDERGARDEN	113
6.1. Greece: <i>Teaching Mathematics In An Experiential Way...</i>	114
6.2. Latvia: <i>Three Little Piglets And A Wolf</i>	120
6.3. Lithuania: <i>Experiential Learning Project “Friendly Vegetables”</i>	123
6.4. Lithuania: <i>Experiential Learning Project “I Care About Our Nature”</i>	127
6.5. Lithuania: <i>The Smart Games</i>	132
6.6. Lithuania: <i>Experiential Learning Activity “Math Outdoor”</i>	136
6.7. The Netherlands: <i>Enrich Outdoor Education By ICT</i>	141
6.9. Portugal: <i>Germinating Seeds</i>	150
6.10. Romania: <i>Experiential learning project in early childhood education: Floating Raisins</i>	156
6.11. Romania: <i>Geometrical Shapes Through Outdoor Learning</i>	164
6.12. Romania: <i>Experiential learning project in kindergarden: Invisible Ink</i>	168
6.13. Turkey: <i>Healthy Life Style</i>	171

CHAPTER 7. CASE STUDIES ON EXPERIENTIAL EDUCATION IN PRIMARY SCHOOL	175
7.1. Greece: <i>How the “refugee issue” helps children become citizens of the world</i>	176
7.2. Latvia: <i>Three little piglets and how they built their houses</i>	182
7.3. Lithuania: <i>A beautiful world. Noun plurals</i>	186
7.4. Lithuania: <i>Happy geometrical shapes</i>	192

7.5. The Netherlands: <i>From people planet prosperity towards involved citizenship</i>	197
7.6. Portugal: <i>Researching about space, astronauts, planets and stars</i>	201
7.7. Romania <i>Experiential Learning Project In Primary School: Let's Count Outdoor!</i>	205
7.8. Romania: <i>Architectural and Environmental Issues As Experiential Learning Activity</i>	209
7.9. Romania: <i>Experiential Learning Project In Primary School: Bean's Diary</i>	213
7.10. Romania: <i>Experiential Learning Project In Primary School: Build A Parachute!</i>	217
7.11. Turkey: <i>Wind power</i>	221
PART D.	226
Chapter 8. INSTEAD OF CONCLUSIONS (Gianina-Ana Massari).....	
REFERENCES	228

FOREWORD

Violeta KAMANTAUSKIENE

Experience-based education is the method or way of teaching through doing, namely it is the process during which young learners obtain knowledge and skills via personal experience. Individuals are involved in a particular activity which they reflect, analyze and that brings higher level of awareness and/or changes in behavior

World tendencies require to educate young learners so that they were creative, flexible, able to analyze, think critically.

It is common sense that the most predominant tendency in education is to educate young learners so that they become creative, flexible, able to analyze, critical thinkers, independent and democratic citizens.

EXPEDUCOM is a project risen from the needs to meet the requirements of the modern world via developing and implementing innovative educational practices related to experience-based pedagogical approach addressed to children aged 3-12.

The project outcomes target at strengthening the professional profile of in-service educators as well as students - future teachers by developing pedagogical guidelines on experiential education, open educational tools-real life cases, offering training for improvement of professional and communicative skills, improving curricula of pre-school, primary and teacher training institutions.

This handbook rose from the needs to meet the requirements of the modern world via developing and implementing innovative educational practices related to experience-based pedagogical approach educating children aged 3-12.

This handbook constitutes an approach for investigating the theoretical and practical training strategies from the perspective of experiential education. The purpose of this paper aims to provide theoretical and practical tools useful in early education specialists and primary education by developing practical strategies component, to support the development of educational activities and research to adapt permanently instructive approach to the specific demands of contemporary society. Due to changes at multiple curricular authors develop paradigms for training future teachers and introduce the need for activity planning, implementation and evaluation of training through experiential learning activities, thereby contributing directly to improving interactive teaching strategies.

Given the above, this handbook is organized as follows:

Part A. General framework on experiential learning

What is experiential learning? (Concept; Characteristics of experiential based learning; The principals of experiential orientation; Experiential based learning stages; Teacher roles; Children roles; Integration of experiential learning in teaching); Overview of conceptual foundations on the experiential based learning (Instructional models for the experiential learning theory; Dewey's foundations for the experiential based learning; Implications of Vygotsky's ideas on learning process; Bruner's conceptual contribution to the experiential based learning; The Jean Piaget's perspective; Kolb's experiential learning theory); Citizenship and 21st century education (An overview of 21st century skills education; What kind of citizens are needed in the Netherlands in the 21st century?); Different approaches of experiential education (Reggio Emilia Approach; High Scope Approach; Pedagogy in Participation or MEM)

Part B. International research report on experiential learning approaches

Part C. Examples of experiential based learning developed in different countries structured as case studies on experiential education in kindergarden and case studies on experiential education in primary school.

This handbook aims to provide the necessary and adequate information regarding experiential learning and teaching and is directed to parents, students and educators of preschool and primary school children. More specifically, the outcomes of the project directly address teachers working in kindergartens and primary schools; students of pre-school and primary education; teacher trainers, researchers at universities providing pre-school and/or primary education; parents or anybody interested in education of children aged 3-12.

PART A.

**GENERAL FRAMEWORK ON
EXPERIENTIAL LEARNING**

Chapter 1.

WHAT IS EXPERIENTIAL LEARNING?

GIANINA-ANA MASSARI, FLORENTINA-MANUELA MIRON

1.1. CONCEPT

Învățarea prin experiență nu este un concept nou pentru practica educațională. Psihologi educaționali de seamă, cum ar fi John Dewey (1859-1952), Carl Rogers (1902-1987) și David Kolb au fundamentat bazele unor teorii de învățare care se focusează pe „învățarea prin experiență” sau „învățarea prin realizare”. Dewey a popularizat conceptul de „educație experiențială”, care se focalizează mai degrabă pe rezolvarea problemelor și gândirea critică, decât pe memorare și învățare pe de rost. Rogers a considerat acest tip de învățare ca fiind unul semnificativ, în comparație cu ceea ce el a numit a fi învățarea cognitivă „lipsită de sens”. Kolb a remarcat faptul că experiențele de învățare concrete sunt esențiale pentru învățare. Un element cheie al învățării experiențiale îl constituie elevul, învățarea depinzând în totalitate de gradul acestuia de implicare în activitate.

Învățarea experiențială reprezintă o filozofie și o metodologie în care profesorii în mod intenționat se implică cu elevii în experiențe directe și își concentrează reflecția pentru a crește nivelul cunoștințelor, pentru a dezvolta anumite aptitudini și pentru a scoate în evidență valorile.

Învățarea experiențială presupune dobândirea de noi cunoștințe și competențe prin a face ceva (learning by doing), concept promovat de John Dewey.

Aceasta reprezintă pentru psihologul Carl Rogers (părintele nondirectivismului), o modalitate de învățare naturală în care experiența este considerată a fi cea mai importantă, aceasta putând fi verificată, deschisă pentru schimbare, corectare.

Sintagma „învățare experiențială” a fost lansată în anul 1984 de D.A. Kolb, care sublinia faptul că acest tip de învățare reprezintă un proces prin care cunoștințele sunt create prin transformarea, rafinarea experiențelor concrete. Motivele pentru care Kolb numește această teorie astfel, sunt: dorința de a evidenția rolul esențial pe care experiența îl joacă în procesul de învățare și celălalt este acela că ar fi inspirată din teoria lui Dewey, Lewin și Piaget.

Teoria învățării experiențiale se diferențiază astfel, de alte teorii cognitiviste - care accentuează în principal importanța însușirii, manipulării, reamintirii unor simboluri abstracte – sau behavioriste care neagă importanța conștiinței individului și a experienței sale subiective în procesul de învățare. Noul concept nu trebuie privit (Kolb, 1984) ca o alternativă la teoriile behavioriste și cognitiviste, ci ca o perspectivă integratoare holistică asupra învățării care combină experiența, percepția, cogniția și comportamentul.

În viziunea lui Kolb, învățarea reprezintă procesul holistic cu ajutorul căruia omul se poate adapta cu ușurință la lumea ce-l înconjoară și presupune funcționarea integrală a întregului organism. Altfel spus, atunci când învață, omul simte, percepe, gândește, acționează.

Învățarea experiențială poate fi definită prin următoarele maxime bine cunoscute:

„Aud și uit, văd și îmi aduc aminte, fac și înțeleg”. (Confucius)

„Există o legătură strânsă și necesară între procesul experienței prezentă și educație” (John Dewey)

Considerăm că învățarea experiențială reprezintă o abordare didactică cu scopul de a eficientiza învățarea prin transformarea unor experiențe concrete în situații noi de învățare.

Modalități de reprezentare a experienței

Simțurile ne oferă lumea prin senzații și percepții voluminoase și diferite. Exprimarea în cuvinte a ceea ce vedem, auzim etc. În acest sens, conceptele și modul asociat de cunoaștere – comprehensiunea sunt o cunoaștere de nivel secundar și oarecum arbitrar. Prin comprehensiune introducem ordine în ceea ce percepem. Cunoașterea prin comprehensiune are anumite calități specifice umane: comunicare, predicție și control - poate fi comunicată și deci transmisă în timp și spațiu, pe când cunoașterea perceptivă poate trece fără urme; cunoașterea conceptuală poate permite modelarea situațiilor și transmiterea în timp și spațiu a modelelor unor situații, iar în funcție de corectitudinea modelelor construite devine posibilă prezicerea și recrearea unor situații perceptibile.

Emisfera stângă a creierului comandă vorbirea, scrierea, calculul, iar emisfera dreaptă – construcția spațială, înțelegerea limbajului simplu, ideatia nonverbală. Persoanele la care predomină activitatea emisferei stângi se bazează în special pe procesele de comprehensiune – la ele va predomina o cunoaștere abstractă, simbolică, analitică și verbală, vor funcționa secvențial, linear, ca un computer digital. Persoanele la care predomină activitatea emisferei drepte se bazează în special pe procese de aprehensiune – pe o cunoaștere concretă, holistică și spațială, analogică și sintetică, bazată pe asemănarea dintre lucruri în recunoașterea modelelor.

1.2. CHARACTERISTICS OF EXPERIENTIAL BASED LEARNING

1. Învățarea este cel mai bine concepută ca un proces, nu ca un rezultat

Spre deosebire de teoriile behavioriste care privesc învățarea în termenii unor rezultate fixe, reprezentând răspunsuri comportamentale la stimuli dați, care rămân stocate în conștiința individului, teoria învățării experiențiale pornește de la prezumția că ideile nu sunt elemente fixe și neschimbate ale gândirii, ci că acestea sunt formate și reformate prin experiență. Pentru Piaget (1970), fiecare înțelegere este rezultatul unui proces de construire și inventare prin interacțiunea dintre asimilare și acomodare. Învățarea este un proces continuu ale cărui rezultate sunt numai o înregistrare istorică, și nu cunoașterea viitorului.

Tendința de a defini învățarea în termeni de rezultate poate deveni (în perspectiva învățării experiențiale) o definiție a neînvățării, în sensul că eșecul modificării unor idei și obiceiuri ca rezultat al experienței este greu de adaptat. O axiomă behavioristă este că puterea unei deprinderi se măsoară prin rezistența sa, prin persistența individului de a se comporta în modul respectiv fără a fi condiționat. J. Bruner afirma că scopul educației este de a stimula interogarea și de a forma deprinderi în procesul de dobândire a cunoașterii și nu de a memora o sumă de cunoștințe: cunoașterea este un proces, nu un produs.

2. Învățarea este un proces continuu bazat pe experiență

Cunoașterea derivă continuu din și este testată permanent, prin experiența educatului. Continuitatea experienței este un adevăr al existenței umane. Principiul continuității experienței este formulat de Dewey (1938, p. 35) astfel: orice experiență ia ceva din experiențele anterioare și modifică într-o oarecare măsură calitatea celor care vor urma.

Procesul durează pe toată perioada vieții, ceea ce înseamnă că învățarea este continuă.

Problema pentru fiecare dintre noi este de a concilia sentimentul continuității și predictibilității experienței cu ceea ce uneori pare a fi în jurul nostru o lume haotică și impredictibilă. Învățarea are loc atunci când apar neconcordanțe între așteptări și experiențe.

Hegel afirma că nici o experiență care ne înșeală așteptările nu este demnă de numele de experiență. Astfel, prin noile experiențe persoana se schimbă câte puțin în fiecare zi și rămâne totuși aceeași. Îndoiala și incertitudinea sunt un antidot împotriva riscului dogmatismului, rigidității, incapacității de a învăța din experiențe noi. La polul opus, dacă individul este prea dur supus vicisitudinilor unor

experiențe noi, va fi paralizat de insecuritate și incapabil de acțiune eficientă. Nici dogmatismul, nici scepticismul absolut nu sunt atitudini favorabile dezvoltării unor sisteme de cunoaștere valide.

Faptul că învățarea este un proces continuu bazat pe experiență are profunde implicații pedagogice: orice învățare este o reînvățare. Un curs nu poate fi gândit ca și cum mintea elevilor ar fi vidă. Fiecare vine în situația de învățare cu idei mai mult sau mai puțin articulate despre tema de studiat. Fiecare avem o teorie despre subiectul în cauză, numai că unele teorii sunt incorecte sau necizelate spre deosebire de altele. Elevii au utilizat până acum teoriile respective. Datoria educatorului nu este de a „implanta” noi idei, ci de a modifica unele mai vechi. Rezistența la ideile noi provine din conflictul în care se află acestea cu convingerile anterioare.

Procesul de învățare va fi facilitat dacă va începe cu evidențierea credințelor și teoriilor educatului, cu examinarea și testarea lor și apoi va continua cu integrarea noilor teorii mai rafinate în sistemul credințelor sale. Ideile noi sunt adoptate de individ fie prin integrare, fie prin substituție (Piaget, ap. Kolb, 1984). Ideile integrate tind să fie părți mai stabile ale concepției persoanei despre lume. Dificultatea elevilor de a învăța noi idei este legată de înclinația de a apăra vechile teorii în uz (Argyris și Schon, 1974).

3. Procesul de învățare cere rezolvarea conflictelor între două moduri dialectic opuse de adaptare la lume

Lewin subliniază conflictul între experiența concretă și conceptele abstracte, între observație și acțiune. Dewey impune impulsul rațiunii, Piaget impune acomodarea ideilor la lumea externă. După Paulo Freire (1974, p. 36) natura dialectică a învățării și adaptării este cuprinsă în conceptul de praxis care semnifică „reflectarea și acțiunea asupra lumii în scopul de a o transforma”. Învățarea pare a fi conform autorilor invocați, un proces marcat de tensiune și conflict. Noile cunoștințe, atitudini și deprinderi sunt dobândite prin confruntarea între patru moduri de învățare experiențială:

- Abilități de experiență concretă – să se implice deschis, fără prejudecăți în experiențe noi,
- Abilități de observare reflectivă – să observe experiențele și să reflecteze asupra lor din mai multe perspective,
- Abilități de conceptualizare abstractă – să creeze concepte care integrează observațiile lor în teorii logice
- Experimentare activă – să fie capabili să utilizeze teoriile pentru a lua decizii și a rezolva probleme pe baza lor.

Cum poate acționa și reflecta cineva în același timp, cum poate fi și concret și teoretic?

Procesul de învățare are două principale dimensiuni: experiența concretă opusă conceptualizării abstracte, și experimentarea activă opusă observării reflective (Kolb, 1984).

Învățarea îi cere elevului să fie când actor, când spectator, uneori să se implice, iar alteori să analizeze detașat.

4. Învățarea este un proces holistic de adaptare la lume

Învățarea experiențială este un concept care descrie procesul central al adaptării umane la mediul social și fizic. Învățarea nu înseamnă numai cogniție și percepție, ea implică funcționarea integrată a întregului organism – gândire, afectivitate, percepție, comportament.

Dacă științele comportamentale au studiat analitic diversele procese ale funcționării psihice a omului, teoria învățării experiențiale este preocupată de modul în care persoana integrează aceste funcții într-o postură holistică, adaptativă, față de lume.

Învățarea este procesul major al adaptării umane. Acest concept depășește cu mult semnificația învățării școlare în sala de clasă. Ea are loc în toate contextele sociale, de la școală la locul de muncă, de la laboratorul de cercetare la biroul managerului, în toate relațiile interpersonale. Această învățare include toate stadiile vieții de la copilărie până la vârsta a treia. Prin urmare, include creativitatea, rezolvarea de probleme, luarea deciziilor, schimbarea atitudinilor

Învățarea concepută holistic include activități adaptative diverse care variază ca extindere în timp și spațiu. Reacția imediată la o situație oarecare nu este considerată drept învățare, ci performanță. Adaptările pe parcursul vieții nu le considerăm învățare, ci dezvoltare.

Performanța, învățarea și dezvoltarea, când sunt privite din perspective teoriei învățării experiențiale, formează un continuu al demersurilor adaptative la mediu. Performanța este limitată la adaptările pe termen scurt, la circumstanțe imediate, învățarea include o stăpânire pe termen lung a unor clase și situații, iar dezvoltarea cuprinde adaptările pe parcursul vieții la situația totală de viață.

5. Învățarea implică tranzacții între persoană și mediu

Un observator al procesului tradițional de învățământ ar conchide că învățarea este în principal un proces personal, intern, limitat la mediul cărților, profesorului și clasei. Mediul lumii reale pare uneori să fie respins în mod activ de sistemele educaționale la toate nivelele.

În teoria învățării experiențiale, relația tranzacțională între persoană și mediu este simbolizată de sensul dual al termenului experiență – unul subiectiv și personal, referindu-se la starea internă a persoanei (cineva a trăit experiența bucuriei unei reușite), iar altul obiectiv și ținând de mediu (cineva are 20 ani de experiență în profesie).

Orice experiență autentică schimbă într-o oarecare măsură condițiile externe în care ea a avut loc. Experiența este un joc al interacțiunii între condițiile interne și condițiile externe (Dewey, 1938).

D. Kolb preferă termenul de tranzacție pentru a semnifica schimburile între condițiile interne și condițiile externe: din moment ce sunt legate, acestea se schimbă în mod esențial. Bandura (1978) susține determinarea reciprocă între caracteristicile personale, factorii de mediu și comportament.

Învățarea în grupuri de training presupune nu doar a răspunde la un mediu fix, crearea activă de către educați a situațiilor prin care pot să-și îndeplinească obiectivele învățării. Învățarea este un proces activ, auto-dirijat, care poate fi aplicat nu doar în cadrul grupului, ci și în viața de zi cu zi.

6. Învățarea este procesul de creare a cunoașterii

Cunoașterea este rezultatul tranzacției între cunoașterea socială și cunoașterea personală. Prima este acumularea obiectivă a experienței culturale anterioare, în timp ce cealaltă este acumularea experienței subiective a persoanei. Cunoașterea rezultă din tranzacția dintre experiențele obiective și subiective într-un proces numit învățare.

Experiențele obiective sunt acumulări ale experienței umane anterioare, în timp ce experiențele subiective derivă din viața personală a subiectului.

În predare este esențială luarea în considerare a naturii materiei de predat pentru a ajuta elevii să o înțeleagă. Există diferite forme viabile de cunoaștere socială, care derivă din ipoteze diferite asupra lumii. Toate sistemele de cunoaștere sunt rafinări ale simțului comun (Pepper, 1942), bazate pe diferite presupuneri privind natura cunoașterii și adevărului. Deși simțul comun este întotdeauna aplicabil ca mijloc de explicare a experienței, el tinde să fie imprecis. Cunoașterea rafinată este precisă, dar limitată în aplicațiile sale, deoarece este bazată pe niște presupuneri sau ipoteze asupra lumii. Simțul comun are nevoie de spiritul critic al cunoașterii rafinate, iar cunoașterea rafinată are nevoie de securitatea simțului comun. Orice cunoaștere socială cere o atitudine de scepticism parțial în interpretarea sa.

Educația prin experiență reprezintă „o filosofie și metodologie în care educatorii intenționat stimulează participanții la procesul de învățare cu experiențe directe și procese de reflecție concentrate pe experiențe pentru a crește nivelul de cunoștințe, de a dezvolta aptitudini și de a clarifica valori în rândul participanților la procesul educațional” („What is Experiential Education?”, Association for Experiential Education).

Conform piramidei învățării, cea mai eficientă învățare apare atunci când sunt folosite metodele de educație experiențială.

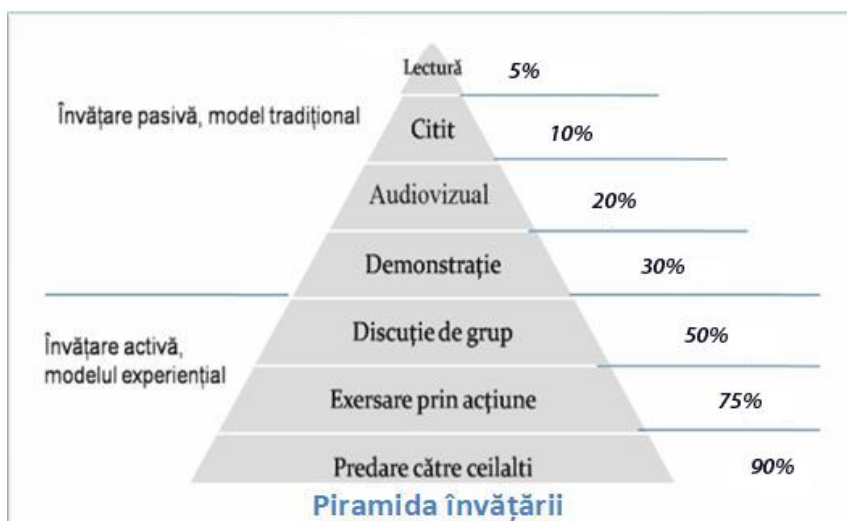


Fig. no1. Learning pyramide

1.3. THE PRINCIPALS OF EXPERIENTIAL LEARNING

Spre deosebire de situațiile din clasa tradițională, în care studenții pot concura unul cu celalalt sau rămân elevi neimplicați sau nemotivați și în cazul în care instruirea este extrem de bine structurată, elevii în situațiile de învățare experiențială cooperează și învață unul de la altul într-o abordare semi-structurată. Instruirea este concepută pentru a angaja elevii în experiențe directe, care sunt legate de problemele din lumea reală și situații în care instructorul mai degrabă facilitează, decât dirijează progresul elevilor.

„Accentul în învățarea experiențială este pus pe procesul de învățare și nu produsul de învățare” (UC Davis, 2011, paral 6). Susținătorii învățării experiențiale susțin că elevii vor fi mult mai motivați să învețe, atunci când aceștia au o miză personală în subiect, decât atunci când sunt puși să revizuiască un subiect sau să citească un capitol din manual. Ceea ce este esențial în învățarea experiențială, este pe de altă parte, „că fazele de a experimenta (a face), de reflecție și de aplicare sunt prezente”. În plus, „etapele de reflecție și de aplicare sunt ceea ce face învățarea experiențială diferită și mai puternică decât modelele menționate de obicei ca: „a învăța prin practică ” sau „învățarea interactivă”.

Următoarea este o listă de principii de învățare experiențială:

- Învățarea experiențială are loc atunci când experiențele atent alese sunt susținute de reflecție, analiză critică și sinteză.
- Experiențele sunt structurate pentru a cere elevului să ia inițiativa, să ia decizii și să fie responsabil pentru rezultate.
- De-a lungul procesului de învățare experiențială, elevul este implicat activ în a formula întrebări, în investigare,

experimentare, fiind curios, rezolvând probleme, asumându-și responsabilități, fiind creativ în construirea unui plan.

- Elevii sunt angajați intelectual, emoțional, social, sentimental și / sau fizic. Această implicare produce percepția precum că sarcina de învățare este autentică.
- Rezultatele învățării sunt personale și constituie baza pentru experiența viitoare și pentru învățare.
- Relațiile sunt dezvoltate și alimentate: elev –sine, elev –alții și elev –lume în general.
- Instructorul și elevul pot experimenta succesul, eșecul, aventura, asumarea de riscuri și incertitudine, pentru că rezultatele experienței nu pot fi în totalitate prezise.
- Oportunitățile sunt oferite elevilor și profesorilor pentru a fi explorate și pentru a-și examina propriile valori.
- Rolurile principale ale instructorului includ stabilirea de experiențe adecvate, expunerea problemelor, stabilirea limitelor, sprijinirea studenților, asigurarea securității fizice și emoționale, precum și facilitarea procesului de învățare.
- Instructorul recunoaște și încurajează oportunitățile spontane de învățare.

1.4. ETAPELE MODELULUI ÎNVAȚĂRII EXPERIENȚIALE

Modelul învățării experiențiale presupune parcurgerea a patru etape:

- **Experimentarea** –care constituie primul pas în acest tip de învățare; experiența reprezintă elementul declanșator, ce crează nevoia unei bune înțelegeri a situațiilor și fenomenelor;
Elevii vor efectua sau vor face o activitate interactivă, fiind ajutați puțin sau deloc de profesor. Exemplele ar putea include: realizarea de produse sau modele, interpretare de roluri, oferirea unei prezentări, rezolvarea problemelor, jocul de rol. Un aspect cheie al învățării experiențiale este mai degrabă, ceea ce elevul învață din experiență decât cantitatea sau calitatea experienței respective.
- **Analizarea** –constă în momentul de reflectare asupra a ceea ce s-a întâmplat.
Elevii vor împărtăși rezultatele, reacțiile și observațiile cu colegii lor, și vor discuta despre sentimentele generate de experiență. De asemenea, aceștia vor discuta, analiza și reflecta asupra experienței. Descrierea și analiza acesteia, le permite elevilor să creeze o legătură cu experiențele viitoare.
- **Generalizarea** –presupune concluzionarea a ceea ce s-a învățat și permite conectarea acesteia cu exemple din lumea reală, vor descoperi astfel, tendințe și adevăruri comune.

- **Aplicarea** –facilitează modificarea comportamentului. Elevii vor aplica ceea ce au învățat din experiență la o situație similară sau diferită de aceasta. De asemenea, elevii vor discuta despre modul în care procesul recent învățat poate fi aplicat și la alte situații viitoare.

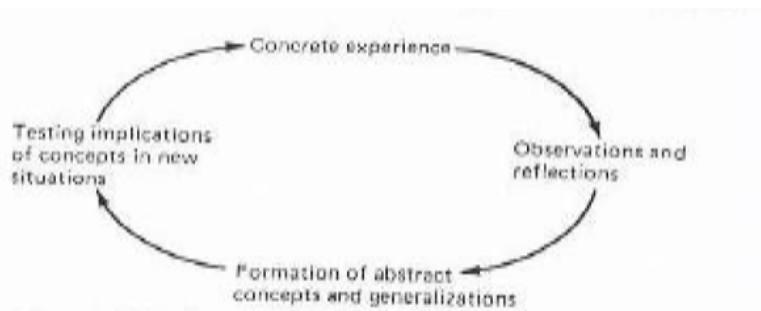


Fig. no2. Etapele modelului învățării experiențiale

Folosind acest model, facem cu mai mare ușurință distincția între calitatea și dezavantajele unei experiențe, deoarece nu toate experiențele sunt cu adevărat educative. De exemplu, luăm cazul unei persoane care fură o mașină cu scopul de a se plimba cu mașina furată. Este foarte posibil ca experiența celui care se plimbă cu mașina furată să-i fi sporit stima de sine.

Important pentru elev este ca acesta să fie capabil să facă diferența între ceva educativ și ceva needucativ. Cu alte cuvinte, experiențele de învățare pot fi pozitive sau negative, iar profesorul este cel care trebuie să se asigure că elevul beneficiază de experiențe pozitive. O experiență, fie ea și relaxantă, amuzantă, fără educație este o experiență ce nu contribuie la dezvoltarea lui din toate punctele de vedere.

Un important avantaj al acestei strategii este centrarea pe experiențele elevului, ce poate fi folosită în orice context, iar variantele de desfășurare ale acesteia depind de creativitatea profesorului.

Ca dezavantaje, putem spune că acest tip de strategie presupune un consum mare de energie, iar lipsa de motivație a elevului, elimină existența unei finalități, și anume dezvoltarea unor abilități de cooperare, de generalizare.

1.5. ROLURILE INSTRUCTORULUI ÎN ÎNVĂȚAREA EXPERIENȚIALĂ

În procesul de învățare experiențială, instructorul ghidează mai degrabă, decât direcționează procesul de învățare în care elevii

sunt interesați în mod natural de procesul de învățare. Instructorul își asumă rolul de facilitator și este ghidat de un număr de pași cruciali pentru învățarea experiențială

- ✓ Să fie dispus să accepte un rol de profesor mai puțin impunător în sala de clasă.
- ✓ Să abordeze experiența de învățare într-un mod pozitiv, într-un mod nedominant.
- ✓ Să identifice o experiență în care elevii vor găsi interes și să fie angajați personal.
- ✓ Să explice scopul învățării experiențiale în diferite situații elevilor.
- ✓ Să împărtășească sentimentele și gândurile cu elevii și să-i lase să vadă că și el învață din experiență, de asemenea.
- ✓ Să lege obiectivele de activitățile cursului și de experiențele directe astfel încât elevii să știe ce trebuie să facă.
- ✓ Asigurarea resurselor relevante și semnificative pentru a-i ajuta pe elevi să reușească.
- ✓ Să permită elevilor să experimenteze și să descopere soluții pe cont propriu.
- ✓ Să găsească un echilibru între aspectele academice și încurajarea predării.
- ✓ Să clarifice rolurile studenților și rolurile instructorului.

1.6. ROLURILE ELEVILOR ÎN ÎNVĂȚAREA EXPERIENȚIALĂ

Calitățile învățării experiențiale sunt acelea în care elevii decid ei înșiși modul în care să fie implicați personal în experiența de învățare (elevii participă activ la propriul proces de învățare și au un rol personal în direcția de învățare). Elevii nu sunt complet lăsați să învețe singuri; cu toate acestea, instructorul își asumă rolul de ghid și facilitează procesul de învățare.

1. Elevii vor fi implicați în probleme care sunt practice, sociale și personale.

2. Elevilor li se va permite libertate în sala de clasă, atâta timp cât fac progrese în procesul de învățare.

3. Elevii de multe ori vor trebui să se implice în situații dificile și provocatoare.

4. Elevii vor auto-evalua propria progresie sau propriul succes în procesul de învățare, care devine principalul mijloc de evaluare.

5. Elevii vor învăța din procesul de învățare și să devină deschiși la schimbare. Această modificare include mai puțin sprijin de

la instructor și mai mult de la colegi, dezvoltarea de abilități pentru a investiga (cercetare) și de a învăța dintr-o experiență autentică, precum și capacitatea de a fi obiectiv în auto-evaluarea performanțelor unei persoane.

1.7. INTEGRAREA ÎNVĂȚĂRII EXPERIENȚIALE (EL) ÎN PREDARE

Cum s-a menționat anterior, un rol primordial pentru instructori este acela de a identifica o situație care provoacă studenții prin rezolvarea de probleme, cooperare, colaborare, de auto-descoperire și auto-reflecție. În același timp, el decide ce elevi ar trebui să învețe sau ce rezultate să obțină de la experiența de învățare. Mai jos sunt câteva puncte principale de luat în considerare atunci când integrați învățarea experiențială în propria dumneavoastră predare.

Planul. Odată ce s-a hotărât utilizarea învățării experiențiale, planificarea se realizează legându-ne de obiectivele de învățare și determinată de ceea ce au nevoie elevii, pentru a termina cu succes activitatea (resurse, cum ar fi lecturi și foi de lucru, cercetare, grile, rezerve și îndrumări către locațiile off-campus, etc.).

Pregătire. După ce planificarea a fost finalizată, pregătește materialele, grilele și instrumentele de evaluare și asigură-te că totul este pregătit înainte de a începe experiența.

Facilitarea. Constă în furnizarea informațiilor și conținuturilor elevilor.

Evaluarea. Succesul unei activități de învățare experiențială poate fi determinată în cursul discuțiilor, reflecțiilor și o sesiune de chestionare. Chestionarea, ca o experiență care se încheie, poate ajuta la consolidarea și extinderea procesului de învățare. În plus, face uz de strategii de evaluare planificate anterior.

Așadar, o educație prin experiență valorifică și susține participarea activă a elevului în procesul de învățare dezvoltându-i acestuia toate simțurile și cele trei domenii ale învățării (cognitive, afectiv și motric).

References:

- Kolb, D.A. (1984), *Experiential learning: experience as the source of learning and development*;
- Gentry, James W. (1990), *What is experiential learning?*, chapter 2 from *Guide to Business Gaming and Experiential Learning*;
- Schwartz, Michelle, *The learning and teaching office*;
- Șoitu, L., (2013), *4D în Educație*, Iași: Institutul European;

- Șoitu, L., (2006), Strategii educaționale centrate pe elev, București: Tipografia Alpha Man;
- Landry, Pierre (2005), *Retour sur le Cycle de Kolb*;
- Wurdinger, S.D. & Carlos J. A. (2010), *Teaching for experiential learning*

CHAPTER 2.

OVERVIEW OF CONCEPTUAL FOUNDATIONS ON THE EXPERIENTIAL BASED LEARNING

2.1. INSTRUCTIONAL MODELS FOR THE EXPERIENTIAL LEARNING THEORY

GIANINA-ANA MASSARI

Modelul de cercetare acțiune a lui Lewin

Conform acestui model, învățarea este facilitată eficient dacă aceasta începe cu experiența prezentă, urmată de colectarea de date și observații despre experiență. Datele sunt ulterior analizate, iar concluziile acestei analize sunt apoi utilizate de actori, în experiență, pentru a le modifica comportamentul și a alege noi experiențe. Astfel, învățarea este concepută ca un ciclu compus din patru stadii:

1. Experiența concretă imediată;
2. Observație și reflecție;
3. Formarea conceptelor abstracte și generalizărilor;
4. Testarea implicațiilor conceptelor în noi situații.

Acest model a fost valorificat de Kolb în construirea teoriei învățării experiențiale pentru două aspecte:

1. Subliniază importanța experienței concrete pentru validarea conceptelor abstracte. Prin raportarea la experiența personală, persoana care învață asigură un sens personal, subiectiv, viu al conceptelor abstracte și în același timp oferă un punct de referință public, concret pentru validarea și testarea conceptelor create în procesul de învățare.
2. Cercetarea acțiune se bazează pe procesul de feedback. Feedbackul prezent în învățarea socială și în procesul rezolvării de probleme oferă o bază pentru un proces continuu al acțiunii orientate către scop și pentru evaluarea consecințelor acestei acțiuni. Lewin considera că ineficiența proceselor se datorează în final lipsei unor procese de

feedback adecvate, unui dezechilibru între observație și acțiune.

Scopul acestui model este de a integra cele două procese – al acțiunii și al observării efectelor acesteia pentru a genera un plus de învățare.

Modelul învățării la J. Dewey

John Dewey (1859-1952), unul dintre pionierii școlii progresive a contribuit la începerea unei logici în ceea ce privește verticalitatea lucrurilor și a proceselor dezvoltând teoria asupra educației raportată la exigențele unei lumi democratice și moderne. Dewey a experimentat o educație care să valorifice trebuințele și interesele ființelor tinere. În concepția sa, educația reprezintă un proces de reconstrucție și reorganizare a experienței trecute în vederea dobândirii unei noi experiențe. „... Educația trebuie să pregătească pentru viitor. Dacă educația înseamnă creștere, ea trebuie să realizeze progresiv potențialitățile prezente și să-i facă astfel pe indivizi să fie mai bine adaptați pentru a face față unor cerințe ulterioare. Creșterea nu este ceva care se completează în clipele de răgaz; ea este o continuă călăuzire înspre viitor” (Dewey, 1972, p. 49). Astfel, adevărata educație garantează dezvoltarea elevului, de accedere spre noi experiențe spirituale și nu numai. Procesul educației coincide cu perfectarea ființei umane pe baza unei autonomii acționale.

Dewey a subliniat diferența dintre viața unui elev și formarea lui în școală, iar acesta a criticat învățarea care se bazează pe relatarea de cunoștințe abstracte și bazate pe text.

Pedagogia lui Dewey este una funcțională ce se bazează pe dezvoltarea proceselor minții ținând cont de acțiunile prezente și viitoare ale copilului. Viața copilului se bazează pe continuitate, iar profesorul trebuie să respecte acest lucru, făcând ca activitățile să aibă un rost pentru trebuințele de mai târziu ale copilului.

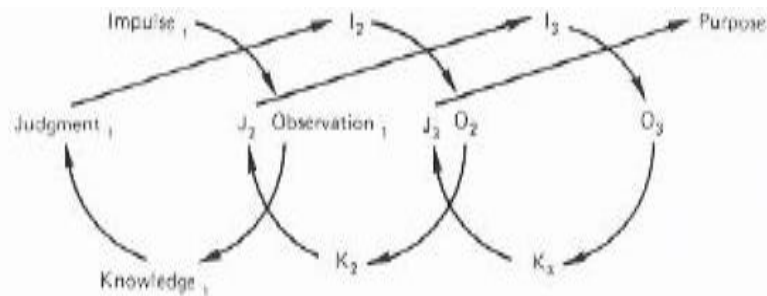
Modelul propus de Dewey este similar modelului lui Lewin, cu deosebirea că evidențiază mai explicit modul în care învățarea transformă impulsurile, sentimentele și dorințele în acțiuni cu scopuri mai înalte. Formarea scopurilor, conform lui Dewey (1938), este o operațiune intelectuală complexă ce implică:

- a. observarea condițiilor înconjurătoare,
- b. cunoașterea a ceea ce s-a întâmplat în condiții similare în trecut, cunoaștere obținută în parte din amintiri, din lecturi, din informații, sfaturi, atenționări primite de la cei care au o experiență mai largă,
- c. judecata, care înseamnă punerea împreună a ceea ce este observat și a ceea ce este aflat de la ceilalți pentru a crea un sens. Un scop diferă de un impuls sau de o dorință prin aceea

că se prevăd consecințele acțiunii date fiind anumite condiții prezente.

Problema crucială a educației este (Dewey, 1938) de a obține amânarea acțiunii imediate până când intervin observația și judecata. Anticiparea consecințelor acțiunii trebuie să se împletească cu dorința și impulsul pentru a determina acțiunea.

Modelul învățării experiențiale, după Dewey, poate fi reprezentat ca un ciclu de patru stadii: impuls, observație, cunoaștere, judecată. După Dewey, procesul învățării integrează experiență, concepte, observații, acțiune. Impulsul experienței dau ideilor forță, iar ideile dau impulsului direcție. Amânarea acțiunii imediate este necesară pentru ca observația și judecata să intervină, iar acțiunea este esențială pentru realizarea scopului.



Teoria lui Piaget asupra învățării și dezvoltării cognitive

Constructivismul reprezintă cea mai influentă paradigmă în educația contemporană.

Acesta pune accent pe cel care învață și nu pe cel care predă, învățarea reprezentând rezultatul implicării și al construirii și reconstruirii mentale. De asemenea, experiența anterioară este valorificată drept fundament pentru noile achiziții.

În cadrul constructivismului piagetian, profesorul este cel care plasează școlarul în centrul activităților ca explorator, capabil să descopere noul și să construiască elemente ale cunoașterii.

În cadrul modelului constructivist al învățării, inteligența reprezintă o formă de interacțiune cu mediul, asupra căruia copilul acționează. Evoluția inteligenței este percepută ca fiind un ansamblu de elemente (experiențele individului, mediul înconjurător), în care, prin interdependența lor are loc procesul de **adaptare**, acest mecanism fiind numit de către Piaget **asimilare** și **acomodare**.

Asimilarea reprezintă un proces prin care individul asimilează noile cunoștințe alături de informațiile pe care le are în acel moment, acomodarea reprezintă o modificare a cunoștințelor deținute deja, la o nouă situație.

Pentru Piaget, dezvoltarea cognitivă presupune trecerea de la cunoașterea concretă la cunoașterea abstractă, construită, de la un mod de cunoaștere activ egocentric, la un mod de cunoaștere interiorizat reflectiv. Procesul de învățare (Piaget, 1970) are loc într-

un ciclu de interacțiuni între individ și mediu, concepție similară celor construite de Lewin și Dewey. În termenii lui Piaget, cheia învățării este interacțiunea reciprocă a proceselor de **acomodare** a conceptelor sau schemelor la experiență și de **asimilare** a evenimentelor și experiențelor din lume în conceptele și schemele existente. Învățarea sau adaptarea inteligentă are loc prin tensiunea echilibrată a celor două procese. Când domină acomodarea are loc imitația – ne modelăm după tiparele sau constrângerile din exterior; când domină asimilarea are loc jocul – propriile concepte și imagini sunt impuse indiferent de realitate. Procesele cognitive ale individului evoluează de la concret la abstract și de la activ la reflectiv, pe parcursul mai multor stadii ale dezvoltării cognitive, care sunt valabile de la naștere până la vârsta de 14-16 ani.:

1. Între 0-2 ani – *stadiul senzorio-motor* – la copil predomină un stil de învățare predominant concret și activ, ce are loc prin simțire, atingere, mânguire. Reprezentarea se bazează pe acțiune. La această vârstă are loc trecerea de la mediul non-intențional la activități bazate pe experimentare, explorare, perioadă în care se dezvoltă comportamentul orientat către scop. Copilul desfășoară o activitate experimentală și exploratorie orientată în mod evident către un scop. Copilul are încă puține scheme și teorii în care poate asimila evenimente și prin urmare, prima atitudine față de lume este acomodativă. Mediul joacă un rol major în formarea și modelarea ideilor și a intențiilor sale, învățarea având loc în principal prin asocierea între stimul și răspuns
2. Între 2-6 ani – *stadiul reprezentărilor* – copilul menține orientarea concretă, dar dezvoltă și o orientare reflectivă pe măsură ce începe să interiorizeze acțiunile, convertindu-le în imagini. Acum învățarea are o predominantă iconică, prin manipularea observațiilor și imaginilor. Copilul este oarecum eliberat de experiența concretă și prin urmare poate să se joace cu imaginile sale despre lume, să le manipuleze. Principala atitudine față de lume a copilului în acest stadiu este divergentă. Este captivat de abilitatea sa de a colecta imagini și de a vedea lumea din perspective diferite.
3. Între 6-11 ani – *stadiul operațiilor concrete* – începe dezvoltarea intensă a gândirii simbolice, abstracte. Învățarea este condusă în acest stadiu după logica claselor și relațiilor și predomină procesul de asimilare. Copilul își dezvoltă independența față de experiența concretă imediată prin dezvoltarea puterilor inductive. El se bazează pe conceptele și teoriile sale pentru a selecta și da formă experiențelor sale.
4. Între 12-15 ani – *stadiul operațiilor formale* – copilul evoluează de la procesele simbolice bazate pe experiențele concrete la procese simbolice bazate pe reprezentări logice. În această

perioadă tânărul capătă o orientare mai activă, dar acțiunea este modificată pe baza puterilor de abstractizare și reflecție. Puterile simbolice pe care le posedă acum îl ajută să se angajeze în raționamente ipotetico-deductive. Construiște posibile implicații ale teoriilor sale și le testează, le experimentează pentru a vedea dacă sunt adevărate. Astfel stilul său de învățare este predominant convergent, spre deosebire de orientarea predominant divergentă a copilului din stadiul reprezentational.

Teoria lui Piaget evidențiază procesele de dezvoltare fundamentale care modelează procesele de învățare la adulți.

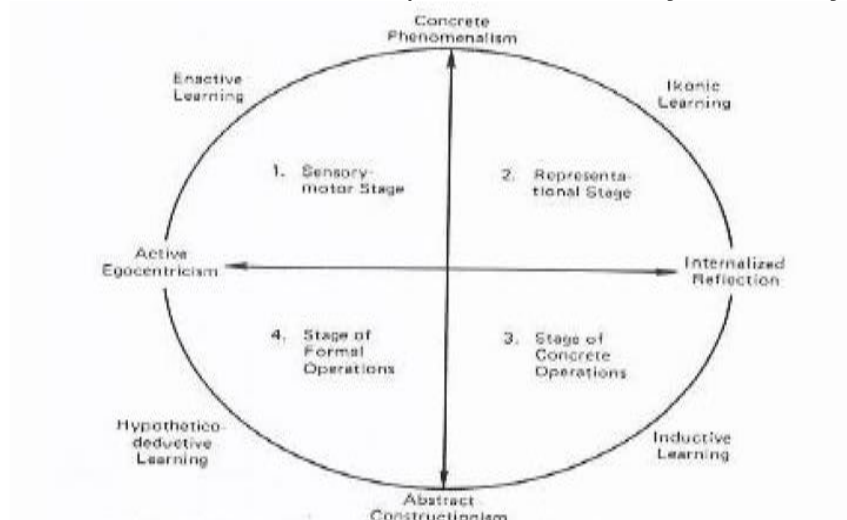


Fig. Stadiile învățării după J. Piaget

2.2. DEWEY'S FOUNDATIONS FOR THE EXPERIENTIAL BASED LEARNING

CRISTINA MESQUITA

The conceptualizations of Dewey about the value of experience, interest, reflective thinking, democratic education are important foundations for pedagogy and for experiential based learning.

The method

Dewey's ideas (1953, 2001) were firstly influenced by Hegel's vision that connects the subjective and objective, the material and the spiritual and the divine and the human. However, his concern with the practical problems, and influenced by the theories of evolutionary

biology of Darwin and the genetic perspective and dynamics of experimental studies of William James, gradually moved away from the absolute idealism of Hegel's thought towards the pragmatism and experimental psychology (Westbrook, 1993). He values the significance of the experimental method as an educational method. He argues that learning experience requires observing materials and processes, inquiring, following clues of ideas to discover connections, and carry out activities to test hypotheses. This process includes moments of observation, review and synthesis, analysis and discussion of the meaningful elements of the experience. Dewey's educational model, synthesized on table 1, uses an approach that is based on experience and requires reflective thinking.

Table 1. Dewey's Educational Model

Phase	Summary
Sensing perplexing situations	The teacher presents an experience where the students feel thwarted and sense a problem.
Clarifying the problem	The teacher helps the students to identify and to formulate the problem.
Formulating a tentative hypothesis	The teacher provides opportunities for students to form hypotheses and try to establish a relationship between the perplexing situation and previous experiences.
Testing the hypothesis	The teacher allows students to try various types of experiments, including imaginary, pencil-and-paper, and concrete experiments, to test the hypothesis.
Revising rigorous tests	The teacher suggests tests that result in acceptance or rejection of the hypothesis.
Acting on the solution	The teacher asks the students to devise a statement that communicates their conclusions and expresses possible actions.

(Adapted from Bybee et al., 2006)

In this sense, the experience is the way to involve children in the intellectual work and problem solving that could be understood as relevant for their learning.

Children are seen as researchers who take a reflexive attitude which involves reasoning and deliberating. This means that children are able to make questions and to find answers. For that they must be actively engaged in the selection of the material that can help them to think about the implications and the relationship between the material and the solution they are looking for (Dewey, 2002, p.128).

The interaction between experience and reflective thinking

For Dewey (2001), reflective thinking is sustained on the value of the experience. The real experience lies in the combination of "the impression that things cause on us, the change in our actions, favoring some of them, resisting and checking others, and what we can do in them to produce further change" (p. 280). Consequently, he believes that educational situations should be based on the child's activity, what he describes as *learning by doing*. He argues that "the principle of continuity of experience means that every experience takes something from past experiences and changes, in any way, subsequent experiences" (Dewey, 1971, p. 26).

To consider the experience as truly educational, they should express a clear educational intention without representing the annulment of children's initiative and the expression of their creativity (Pinazza, 2007).

The learning environment

Dewey (1971) values the experience as a source of learning, assuming that all education is experiential action performed by the subject in a learning process in action. He also emphasizes the idea that the educational experience is a direct manifestations of life itself (Gamboa, 2004). In this regard, he recognizes the school as a physical and social environment that allows the child's growth. The school's aim is "first of all to live, and learn through the interaction with that experience" (Dewey, 2002, p. 41). Because of that, it is important to use the resources from the environment, promoting study visits, contacting with the natural environment, such as discovery of locus that broaden the experiences and knowledge.

Dewey gave a strong importance to the materials in the educational process. He considered that the materials must be 'real', direct and obvious, because he understood that the more natural and direct the experiences of children are, the more meaningful the learning experience is.

In this sense, space and materials should allow the child to engage in occupations, not only for sensory training but also for the discipline of mind¹.

¹ In Chapter one of *How we Think*, Dewey (1910) states that: "Discipline of mind is thus, in truth, a result rather than a cause. Any mind is disciplined in a subject in which independent intellectual initiative and control have been achieved. Discipline represents original native endowment turned, through gradual exercise,

Dewey believed that education happens beyond the school. An overarching principle in Dewey is that the growth based on experiences does not have an end. It continues throughout one's life. In effect, Dewey saw education as an *experiential continuum* (Dewey, 1938, p. 28), a succession of knowledge, experiences, and individual growth – unique to each individual. This definition expresses the idea of a school as a laboratory of learning opportunities (Dewey, 1971). In this sense, school time must be flexible and move over the course of the experience moments, allowing children to: experience the materials and interact socially; talk, discuss, communicate; observe and interact with peers and adults so that they can take advantage from the action; cooperate and participate in the life of the group; reflect and become aware of what they did and what they need to do; discover the potential of experience and use it to solve problems; research to get the real meaning of the everyday experiences in the world they live in.

Dewey also argues that there is a second criterion of educational experience - the interaction. In his words, "every genuine experience has an active side which changes in some degree the objective conditions under which experiences are had" (p. 34). This requires interaction, or the interplay between external (environment - "whatever conditions interact with personal needs, desires, and capacities to create the experience which is had" p. 44) and internal conditions. Thus, these two factors (*experiential continuum* and interaction) work together to articulate truly educational experiences. Situation after situation, an individual carries over something from one experience to the next (continuity). As this happens, that individual's world grows bigger, drawing more contact with a wider range of individuals/experiences (interaction).

In the end, the role of the educator must be to understand the capacities of the children and adapt the experiences they create to those individuals' needs at the present time.

For Dewey (2002), the living experience takes place through social interaction. Dewey's concept of togetherness focuses on the interactional complicity that is held through a mutual give and take: the teacher receives but he should not be afraid to also give.

into effective power. So far as a mind is disciplined, control of method in a given subject has been attained so that the mind is able to manage itself independently without external tutelage. The aim of education is precisely to develop intelligence of this independent and effective type - a disciplined mind. Discipline is positive and constructive" (p. 13).

References

- Dewey, J. (1910). *How We Think*. Boston: D.C. Heath & Co, Publishers. Retrieved from <http://archive.org/details/howwethink000838mbp>
- Dewey, J. (1929). *The sources of a science of education*. New York: Horace Liveright.
- Dewey, J. (1953). *Como Pensamos*. São Paulo: Companhia Editora Nacional.
- Dewey, J. (1938). *Experience and education*. New York, NY: Touchstone.
- Dewey, J. (1971). *Experiência e educação*. São Paulo: Companhia Editora Nacional.
- Dewey, J. (2001). *Democracy and Education*. Hazleton: The Pennsylvania State University - Electronic Classics Series, Jim Manis, Faculty Editor.
- Dewey, J. (2002). *A escola e a sociedade e A criança e o currículo*. Lisboa: Relógio D'Água Editores.
- Gambôa, R. (2004). *Educação, ética e democracia: a reconstrução da modernidade em John Dewey*. Porto: Edições ASA.
- Pinazza, M. A. (2007). John Dewey: inspirações para uma pedagogia da infância. In J. Oliveira-Formosinho, T. M. Kishimoto, & M. A. Pinazza, *Pedagogia(s) da Infância*:
- Westbrook, R. B. (1993). John Dewey. *Prospects: the quarterly review of comparative education*, XXIII: 1\2, 277-91.

2.3. IMPLICATIONS OF VYGOTSKY'S IDEAS ON LEARNING PROCESS

GIANINA-ANA MASSARI

Filozoful rus Lev Semionovich Vîgotsky (1896-1934) este cunoscut pentru cercetarea cu privire la **dezvoltarea copilului** și cercetarea ce vizează **psihologia educațională**.

Vîgotsky considera că în ceea ce privește dezvoltarea unei persoane din punct de vedere mintal, cum ar fi gândirea, limbajul, motivația, este nevoie să se raporteze la cultura pe care o are. Astfel, rolul interacțiunii sociale este foarte important pentru Vîgotsky, acesta denumindu-le drept o abordare socio-culturală.

Prin dezvoltarea unei persoane din punct de vedere mintal, Vîgotsky reprezintă cunoștințele împărțite ale unei culturi astfel: „Fiecare funcție în dezvoltarea culturală a copilului apare de două ori: prima dată la nivel social, și mai târziu la nivel individual; prima dată între oameni (interpsihologic) și apoi în interiorul copilului

(intrapsihologic). Aceasta cere egalitatea atenției voluntare, memoriei logice și a formării conceptelor. Toate funcțiile înalte își au originea în relațiile dintre indivizi umani” (Maria Madeleine Aruștei Stănoiu, 2009).

În teoria lui Vîgotsky, interacțiunile sociale au un rol important în dezvoltarea cognitivă. Pentru el această dezvoltare este o consecință a învățării; el considera că învățarea socială precede dezvoltarea: *conștiința și cunoașterea sunt produsele finale ale socializării și comportamentului social.*

Pentru un copil, învățarea este spontană, iar pentru un elev învățarea începe cu imitația. Copilul preia învățatul zilnic din familie și din viața socială, prin acest mod copilul făcând legătura dintre conceptele zilnice și propriile experiențe ce le are cu obiectele din jurul său, iar datorită acestui lucru, el va putea să integreze totul în schemele lui de cunoaștere.

Un al doilea aspect al teoriei lui Vîgotsky, îl reprezintă ideea potențialului pentru dezvoltarea cognitivă, care este limitată de o anumită distanță de timp pe care el o numește **zona dezvoltării proxime.**

Zona dezvoltării proxime reprezintă diferența dintre capacitatea copilului de a rezolva probleme asistat și capacitatea de a le rezolva singur. Această zonă include toate funcțiile și activitățile pe care un copil le poate realiza doar asistat de cineva. Pe de altă parte, nivelul dezvoltării actuale, se referă la toate activitățile și sarcinile pe care un copil le poate realiza singur.

Conform lui Vîgotsky, învățarea produce o diversitate de procese interne ce devin active doar dacă elevul interacționează în mediul său cu domenii și cooperează cu partenerii lui.

Raportând ideile, conceptele fiecărui pedagog la educația în aer liber/ outdoor education, considerăm că este necesar a realiza o schemă ale cărei elemente constituie componentele principale ale prezentei lucrări, pe care le implică abordarea educației în aer liber/ *outdoor education* în ciclul primar:

2.4. BRUNER'S CONCEPTUAL CONTRIBUTION TO THE EXPERIENTIAL BASED LEARNING

CRISTINA MESQUITA

The pedagogical conceptualization of Bruner (2000) emphasizes the idea that children's development should take place in an enabling environment where both the agency and the self initiated work are promoted.

For Bruner (2000), self initiation means to allow children to control what they want to do. It means that school should promote an enabling culture that encourages them to participate in their learning process, to be proactive, to learn in community and collaboratively, creating social or natural meanings about the world.

Learning environments

Valuing the environment and the culture, Bruner developed the idea of the folk pedagogy. He was concerned about how the children's minds work, but mainly with how children learn and what allows them to develop. The folk pedagogy values the common interaction, while activity helps children to see the world but also the constitutional role of culture in the construction of meanings (Bruner 2000).

According to Bruner (2000) the environment has a key role in the learning process. Action learning takes place through the manipulation of objects, not as mere imitative handling or breeding, but as action intentionally conducted by individual purpose. For him "the mind is an extension of the hands and of the tools we use" (p.198). The space where children learn should be an opportunity to act, think and communicate. It should be configured as a starting point that allows developing an effective sense of participation in an enabling community. However, the learning space is not conceived by the author merely as physical. The enabling action depends on the existence of a social context. For Bruner (1997) the artifacts lead children to different actions and because they are steeped in culture, they constitute a way of cultural appropriation. The author believes that thinking involves learning how to use cultural, symbolic and material tools considering the specificities of its use (Bruner, 1998).

The materials are conceived as opportunities for action and interaction that facilitate play. Regarding this, play allows to learn in

situation, to think about the action, as well as the construction of social functioning rules.

The activity of manipulation of objects through games favors dialogue and the construction of a narrative action.

This perspective emphasizes that the organization of time should favor the action of the child with the materials, experiencing their chances and the dialogue about their achievements. In this sense, every moment of the day should be a learning opportunity. The actions of adults developed during the daily routine should structure the spontaneous activity of the child (Smidt, 2011).

The ideas of Bruner (2000) about the importance of adult as a scaffold in the construction of children's meanings, highlight the importance of the dynamic of the daily routine that should be deeply interactive, conversational and reflective. The educational environment is conceived by Bruner (2000) from the sociocultural constructivist perspective that values the child's action in a cultural context, noting that there is an active interaction between reality and the subject in the construction of knowledge, feelings and emotions.

Children's Interactions with adults and with peers

The importance given by Bruner (1998, 2000) to the experience and culture, leads him to emphasize that learning is not a passive act, not merely individual. The author asserts that learning is a construction "of ourselves as agents animated by self-generated intentions" (Bruner, 2000, p. 35) within communities, through exchange and negotiation that create a culture of participation. An important role of education is to help children to build a self-consciousness that necessarily involves the recognition of the other as an himself.

Children are viewed as thinking beings who build and share the meanings, through interactions with others and with the engagement with culture. This view highlights the important role of collaboration and dialogue that educators should promote with the children during the educational process. The interaction between the educator and the child must be a dialogic transaction to allow the child to complexify his thinking and make meaning of the world around him (Bruner, 1998).

However, he emphasizes that the support that the educator gives the child, should never replace the construction of meaning by himself.

The educator is a scaffold that helps children construct meaning through collaboration and negotiation (Bruner, 2000, p.86).

Children as active and competent learner

From the perspective of Bruner (1997, 1998, 2000) the child is competent to perform intentional actions. He also states that learning is a complex process that will expand as the subject structure the meanings of the world. In this sense, the author considers that the activities should take into account four fundamental aspects: action, reflection, collaboration and culture.

Children can define their actions in order to achieve satisfaction, which makes them assumption makers. From this meaning, Bruner conceived the concept of *child's agency* (Smidt, 2011). Bruner (1984) refers that the activity contrasts with the mere movement. The activity requires conducting and regulating the movement to achieve some specific goal.

To regulate the intentional action, it is necessary to have the opportunity to compare what we try to do with what we do in fact, using this difference as a correction factor.

In this sense, the author reveals that intentionality precedes ability, noting that the deliberate intent on the use of objects will gradually show the child's autonomy.

Learning, as an act of motivation and discovery, should have the purpose of going beyond the transmission and repetition. Only the attitude of reflecting on the actions developed by oneself allows discovering the solutions. According to Bruner (1998, 2000), learning is only meaningful when built by oneself, which implies discovering. The author considered that there are two important experiential based learning strategies that help children to discover, to reflect, to collaborate and to contact with culture: play and the narrative.

Play and the narrative as means to make sense of experience

Play provides an excellent opportunity to test the combination of behaviors that would never be tried under pressure. Repeated opportunities to play allows children to develop their observation skills and the ability to reflect upon actions.

Moreover, playing is connected with the symbolism that children give to materials, creating and adapting them to new situations. Accordingly, the symbolic processing of playing has consequences on

the child's learning, serving as a vehicle for contact with social conventions. The narrative, as a mean of oral speech, describe facts in real or imagined sequences that conveys the meaning.

References

- Bruner, J. (1984). Orígenes de las estrategias para la resolución de problemas. In J. Bruner, *Acción, Pensamiento y lenguaje* (pp. 129-147). Madrid: Alianza.
- Bruner, J. (1997). *Actos de Significado: para uma psicologia cultural*. Lisboa: Edições 70.
- Bruner, J. (1998). *O Processo da Educação*. Lisboa: Edições 70.
- Bruner, J. (2000). *Cultura da Educação*. Lisboa: Edições 70.
- Smidt, S. (2011). *Introducing Bruner: a guide for practitioners and students in early years education*. London: Routledge.

2.5. THE JEAN PIAGET'S PERSPECTIVE

ROSA NOVO

This sub-chapter presents the Piagetian constructivist interpretation and the aim is to expand the understanding of experiential learning beyond the stages of development, since it is the most widely-publicized theme of Jean Piaget's work.

In the field of the development of intelligence, an idea seems to stand out in the legacy of this author – the idea of operation. The knowledge is not a copy of reality, because it is always a reciprocal action between the child and the object through the double game of assimilation and accommodation: the child acts on objects by transforming them according to the action schemes and the operations on these schemes available to him/her. In turn, the child imposes them modifications based on the variations of the objects in order to incorporate them. In this process, the balancing mechanism – considered by Piaget as fundamental – is decisive to the adjustment of the child to new information and to the needs of adaptation to the environment.

To know is thus to modify, to transform the object, to understand the process of this transformation and, consequently, to understand

the way the object is constructed. An operation is then the essence of knowledge. It is an internalized action that modifies the object of knowledge.

Therefore, it is understandable when Piaget (1970: 68) states: "although the child's activity in certain levels entails the manipulation of objects and even a certain amount of physical contact", the operations "are not derived from the handled objects, but from the child's (mental) actions and the coordination of these actions." In other words, experiential learning is not the passive reproduction of what the teacher shows or does what he has planned, but of progressive action and construction involving creation through the pursuit of the problems and issues that children face.

These ideas become clear in the light of the distinction made by Piaget between learning in the strict sense and learning in a broad sense. In the strict sense it is an acquisition that is made in terms of the experience that takes place in time, i.e., mediate and non-immediate, (Piaget, 1974, p. 53). Learning, in a broad sense, is "the union of the learnings in the strict sense and the balancing processes" (Piaget, 1974, p. 54), that is, the processes resulting from an internal organization that enables new knowledge.

Thus, for Piaget, the concept of learning is much more comprehensive than the meaning with which it is normally used because it does not end in the strict sense of mediate experience, but, along with the balancing process, assumes the dimension of the cognitive structure development itself, which means intellectual growth.

And according to the form of the experience held by the child, learning can focus the physical and the logical-mathematical knowledge or the social knowledge. In the first case, the child's initiative is emphasized, his/her actions on objects and their comments about the feedback of the objects. In the second case, the knowledge that the child acquires through experience is derived not from the objects, but from the coordination of actions that the child exerts on objects and the awareness of this coordination. These two experiences are interrelated; one is the reason for the emergence of the other. In the case of the social knowledge there are similar procedures, since it requires the coordination of views to regulate their actions in mutual benefit.

So, we can say that the experiential learning involves tasks that include not only an operational component (child - object interaction), but also a communicative component (child - other children interaction).

However, it is highlighted that the child's interest is necessary to play a regulatory function in the experiential learning. Without interest, the child will never make the constructive effort of understanding the experience.

Starting from Piaget's thought, the teacher must focus on a dynamic in the classroom capable of allowing the collaboration and cooperation of exchanges of points of view, in the pursuit of knowledge and moral growth. This must be based on the organization of the educational environment and the style of adult-child interaction capable of promoting autonomy.

References

- Piaget, J. (1970) Science of education and the psychology of the child. New York: Viking Compass.
- Piaget, J.; Greco, P. (1974) Aprendizagem e conhecimento. São Paulo: Freitas Bastos.
- Piaget, J (1978). A psicologia da inteligência. Lisboa: Livros Horizonte.
- Kamii, C.; Devries, R. (1988) O conhecimento físico na educação pré-escolar – implicações da teoria de Piaget. Porto Alegre: Artes Médicas.

2.6. KOLB'S EXPERIENTIAL LEARNING THEORY

GIANINA-ANA MASSARI

Sintagma *învățare experiențială* a fost lansată, în 1984, de D.A. Kolb, subliniind faptul că acest proces de învățare este construit concentric pe patru piloni: **a experimenta ceva, interpretarea experienței, generalizarea experienței, aplicarea experienței.**

A experimenta ceva presupune cunoașterea unui lucru prin contact direct cu realitatea, el manifestă emoții, anumite dispoziții și senzații. Interpretarea experienței se referă la înțelegerea fenomenului prin analiză și diagnoză, în care individul integrează senzațiile în percepții, reflectează, observă lucrurile, fenomenele. Generalizarea experienței implică asocierea de situații reale cu interpretări personale prin care conceptualizează, stabilește conexiuni, identifică reguli și soluții. Aplicarea experienței se referă la etapa în care individul experimentează sau acționează, oferind noi sensuri ori experimentează moduri noi de acțiune.

Altfel spus, Kolb consideră învățarea un proces holistic ce presupune o funcționare integrată a întregului organism prin care omul se adaptează la mediul înconjurător. Practic, putem asocia acest model ciclic cu taxonomia cognitivă a lui Bloom ce are drept criteriu de ierarhizare a comportamentelor *complexitatea* acestora: *cunoașterea și deprinderile și capacitățile intelectuale* axate pe următoarele procesele mentale prin care se așteaptă ca elevii să

reuşească: *cunoaşterea, înţelegerea, aplicarea, analiza, sinteza, evaluarea*. Deoarece Bloom oferă un cadru suport pentru profesori în procesul de identificare a abilităţilor necesare pentru învăţare şi contribuie cu modalităţi de sprijin pentru profesori în a-i ajuta pe elevi să atingă aceste abilităţi, putem afirma că această taxonomie a domeniului cognitiv se fundamentează atât pe etapele cognitive structurate de Jean Piaget cât şi pe perspectivele constructiviste şi în mod special pe teoria lui Lev Vygotsky (interacţiunea socială stabileşte baza pentru învăţare, iar instrumente sociale şi culturale servesc drept mediatori pentru învăţare).

Prin perspectiva integratoare holistică asupra învăţării care combină experienţa, percepţia, cogniţia şi comportamentul, teoria învăţării experienţiale se diferenţiază de alte teorii cognitiviste - care accentuează în principal importanţa însuşirii, manipulării, reamintirii unor simboluri abstracte – sau behavioriste care neagă importanţa conştiinţei individului şi a experienţei sale subiective în procesul de învăţare.

Folosind modelul propus de Kolb, putem face distincţia dintre avantajele şi deavantajele unei experienţe deoarece nu toate experienţele au scop educativ. Este evident că unele experienţe de învăţare pot fi pozitive sau negative, însă profesorul este cel care trebuie să se asigure că în procesul didactic elevul beneficiază de experienţe pozitive deoarece acestea contribuie la dezvoltarea armonioasă a individului. Un avantaj substanţial al acestei abordări este centrarea pe rolul experienţelor elevului şi al caracterului practic al activităţilor de învăţare, în care variantele de desfăşurare depind de nivelul de creativitate al profesorului. Dacă ar trebui să menţionăm şi un dezavantaj al acestei abordări putem menţiona alocarea unui consum mare de timp pentru desfăşurarea activităţii care trebuie să fie bine structurată în aşa fel încât elevul să fie permanent motivat şi implicat în activitate.

CHAPTER 3.

CITIZENSHIP AND 21ST CENTURY EDUCATION

3.1. AN OVERVIEW OF 21ST CENTURY SKILLS EDUCATION

JAN KAREL VERHEIJ, FRANK VAN HERWAARDEN

21st Century Skills – an introduction

Literature on 21st Century Skills suggests that education must be innovated for learners to flourish in the new global economy and to participate fully in democratic processes. Success in today's world requires the ability to access, synthesize, and communicate information; to cooperate across differences to solve complex problems; and to create new knowledge through the use of modern technologies. Four conclusions can be derived from literature on 21st Century Skills. (Ledward & Hirata, 2011)

1. The learner's world today is fundamentally different than before; the expansion of ICT is changing the nature of learning.
2. 21st Century Skills establish new learner standards by integrating core-subject mastery and present interdisciplinary themes (e.g., civic literacy, global awareness, and environmental literacy).
3. There are many different ways (e.g., place-based, project-based, or problem-based learning) in which development of 21st Century Skills can be achieved based on a rich learning environment and skilled teachers.
4. There is evidence linking 21st Century Skills with positive learner outcomes.

There is no shortage of current descriptions of 21st century skills and knowledge. Below two are given that differ strongly.

The funded Assessment and Teaching of 21st Century Skills (AT21CS) consortium organizes 21st century skills, knowledge, and attitudes, values, and ethics into these four categories:

- Ways of Thinking: creativity and innovation, critical thinking, problem solving, decision making, and learning to learn (or metacognition)
- Ways of Working: communication and teamwork

- Tools for Working: general knowledge and information communication technology (ICT)-literacy
- Living in the World: citizenship, life and career, and personal and social responsibility, including cultural awareness and competence.

A second description comes from the book *The Global Achievement Gap* by Tony Wagner (2008). He proposes that students need seven survival skills to be prepared for 21st century life, work, and citizenship:

- critical thinking and problem solving
- collaboration and leadership
- agility and adaptability
- initiative and entrepreneurialism
- effective oral and written communication
- accessing and analysing information
- curiosity and imagination.

Education systems around the world have developed schemes emphasizing on developing the skills, knowledge, and attitudes necessary for learner's in the 21st century.

Models of 21st century skills

There is no consensus on what skills are most important for success in the 21st century. Each education system chooses their own focus and prioritization. In a literature review Voogt and Pareja Roblin (2010) conclude that, despite this variation one can distinguish a set of general, most important skills. They compared five models for 21st century skills, worldwide, and in addition they looked at research and recommendations of the European Union, OECD and UNESCO.

Voogt and Pareja Roblin (2010) conclude that in all models mentioned skills in the areas of:

- Collaboration
- Communication
- ICT use
- Social and / or cultural awareness (including citizenship).

In addition, in most models also mentioned skills in the following areas:

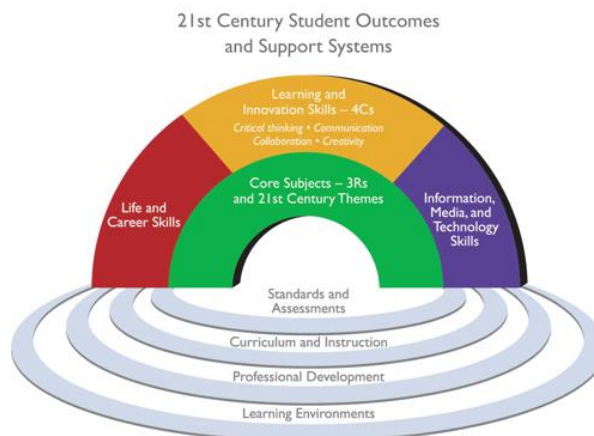
- Creativity
- Critical thinking
- Problem-solving skills
- Productivity.

Furthermore, there are a number of skills that are mentioned in some models. These are:

- Skills of self-learning (metacognition),
- Planning,
- Flexibility,
- Adaptability.

More recently conative skills are increasingly mentioned. According to Marzano and Heflebouwer (2013) conative skills are the ability to analyse situations based on what we know, what we find and how we take the right steps. It involves skills to understand and manage yourself and to understand others and to work with them.

In the US the 21st century skills are often called '*the four C's*': critical thinking, creativity, communication and collaboration. These have been further developed in a model well-known through the publication by Trilling and Fadell (2009). In this model the ICT skills and life and career skills are appointed separately. It differs from many other models.



Another model used much internationally is the KSAVE model ATCS (Binkley et al, 2010; Binkley et al, 2012). This model distinguishes itself in the fact that generic skills are clustered into four categories: ways of thinking, ways of working, handling and instruments function in society (global citizenship). For each skill listed sub-skills with the necessary knowledge, skills and attitudes are described.

The KSAVE model:

A. Ways of Thinking

1. Creative and innovative thinking.
2. Critical thinking, problem solving, decision-making.
3. Learning to learn (metacognition).

B. Methods of work

4. Communicate.
5. Collaboration (teamwork).

C. Instruments (supplies to operate)

6. Information Literacy.
7. ICT skills.

D. Global Citizenship

8. Citizenship (locally and globally).
9. Living and working (career).
10. Personal and social responsibility (incl. cultural awareness and competence).

The skills

The models mentioned have been developed in different contexts with different frames and goals, and have different areas of interest within the overall set of skills. There are also differences in terminology used to categorize the generic skills. Explicit references to a level of education (primary, secondary, vocational or higher education) or an educational environment (formal or informal) are often missing.

The Netherlands institute for curriculum development SLO (2014, concept version) categorizes the knowledge, skills and attitudes into the following eight groups, based on the description of Voogt and Pareja Roblin (2010) and the KSAVE model.

Creativity

This skill is about coming up with new ideas and the ability to work out and analyse. More specifically, it concerns:

- an inquisitive and entrepreneurial attitude;
- be able to think outside-the-box;
- knowing creativity techniques (brainstorming, etc.);
- risk-taking and errors can be seen as learning opportunities.

Critical thinking

Critical thinking involves the ability to formulate their own vision or substantiated opinion. More specifically, it concerns:

- ability to formulate and argue effectively;
- interpret, analyse and synthesize information;
- be able to identify gaps in knowledge;
- the ability to ask meaningful questions;
- critically reflect on their own learning process;
- be open to alternative viewpoints.

Problem solving

This skill involves recognizing a problem and arriving at a plan to resolve the issue. More specifically, it concerns the following knowledge, (sub)-skills and attitudes:

- be able to identify, analyse and define problems;
- knowledge of strategies for dealing with unfamiliar problems;
- to generate, analyse and select solving strategies;

- creating patterns and designs;
- ability to take well-founded decisions.

Communicating

This is about communicating effectively, and efficiently transmitting and receiving a message. More specifically to:

- targeted information exchange with others (speaking, listening, recognizing the essence of a message, articulate effectively, clearly, avoid noise);
- ability to handle various communication situations (meetings, presentations, debates, etc.) and knowing the conversation rules and social conventions in every situation;
- cope with various media (texts, films) and the use of different strategies, thereby;
- have an understanding of the opportunities offered by ICT to communicate effectively.

Cooperation

This involves achieving common goals, complementing one another and offering support. More specifically, it:

- Recognise and acknowledge different roles with yourself and others;
- Requesting, giving and receiving aid;
- a positive and open attitude to other ideas;
- respect for cultural differences;
- negotiate and make agreements with others in a team;
- function in heterogeneous groups;
- Ability to communicate effectively.

Digital Literacy

This skill involves the effective, efficient and responsible use of ICT as a combination of:

- basic ICT-skills
- media literacy
- information literacy

Social and cultural skills

These skills involve learning to effectively, work and live with people from different ethnic, cultural and social backgrounds. More specifically, it concerns:

- Ability to communicate constructively in different social situations with respect
- other visions, expressions and behaviour;
- know and recognise codes of conduct in different social

- situations;
- recognize their own feelings and channelled and can express constructive;
- showing empathy and concern for others;
- awareness of their own individual and collective responsibility as citizen in a society.

Self-regulation

This skill is about being able to realize targeted and appropriate behaviour. More specifically, it concerns:

- setting realistic goals and priorities;
- targeted action (concentration, can motivate themselves and focus on the performance of a task, independence) and monitoring the process (planning, time management);
- reflection on the performance of the task, and feedback on their own behaviour and actions to make appropriate next steps;
- have insight into the development of their own competences;
- take responsibility for their own actions and choices, and have a view of the consequences of its actions for the environment, even in the long term. (SLO, 2014, concept version)

How to teach 21st century skills

Decades of empirical research on how individuals learn, substantiate ideas about the best ways to teach 21st century skills (Saavedra & Opfer 2012). More specifically these are:

1. Make It Relevant
2. Teach Through the Disciplines
3. Simultaneously Develop Lower- and Higher-Order Thinking Skills
4. Encourage Transfer of Learning
5. Teach Students to Learn to Learn
6. Address Misunderstandings Directly
7. Understand That Teamwork Is an Outcome and Promotes Learning
8. Exploit Technology to Support Learning
9. Foster Students' Creativity

Assessing 21st century skills

According to Saavedra & Opfer (2012) twenty-first century skills are more challenging to teach and learn, and they are also more difficult to assess. Designing tests that measure lower-order thinking skills, such as memorization, is straightforward in comparison to measuring such skills as creativity, innovation, leadership, and teamwork.

Both formative and summative assessments play useful roles in teaching for 21st century skills. Formative assessments remind students of their learning goals, give them feedback about their progress and misunderstandings as they learn, guide them to shift course as they need, and are a critical part of the learning process. The formative assessment process generally does not involve others beyond teachers and students.

Summative assessments give students the opportunity to demonstrate what they understand at a given point in time. They are useful to certify students' achievements, for example, to assign grades, determine level of preparedness for further study, or award diplomas. They are also useful to measure teachers', schools' and systems' performance for accountability and improvement purposes. There are many ways for students to demonstrate their understanding. They could debate about an issue related to a generative topic from a certain perspective and then from another. They could apply what they learn about literature to their own creative writing. They could use what they learn about the scientific method to develop their own experiment. The list of possibilities is endless (Saavedra & Opfer 2012).

References

- Assessment and Teaching of 21st Century Skills. (Undated). What are 21st century skills? Retrieved March 28, 2012, from <http://atc21s.org/index.php/about/what-are-21st-century-skills/>
- Binkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M., & Rumble, M. (2010). *Defining 21st century skills*. Melbourne: University of Melbourne.
- Binkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M., Miller-Ricci, M., & Rumble, M. (2012). Defining 21st century skills. In: Griffin, P., McGaw, B., & Care, E. (Eds.), *Assessment and teaching of 21st century skills*. Dordrecht: Springer.
- Ledward, B. C., and D. Hirata. 2011. *An overview of 21st century skills*. Summary of *21st Century Skills for Students and Teachers*, by Pacific Policy Research Center. Honolulu: Kamehameha Schools–Research & Evaluation.
- Marzano, R.J., & Heflebouwer, T. (2013). *Klaar voor de 21e eeuw. Vaardigheden voor een veranderend wereld*. Rotterdam: Bazalt.
- Saavedra, A.R., & Opfer, V.D., (2012) *Teaching and Learning 21st Century Skills: Lessons from the Learning Sciences*. RAND Corporation
- Trilling, B., & Fadel, C. (2009). *21st century skills*. San Francisco: Jossey-Bass.
- Voogt, J., & Pareja Roblin, N. (2010). *21st century skills. Discussienota*. Enschede: Universiteit Twente.
- Wagner, T. (2008). *The global achievement gap: Why even our best schools don't teach the new survival skills our children need—and what*

we can do about it. New York, NY: Basic Books.

3.2. WHAT KIND OF CITIZENS ARE NEEDED IN THE NETHERLANDS IN THE 21ST CENTURY?

GERBEN DE VRIES

Preface

Worldwide two major ways of thinking about what people are needed in the 21st century can be recognized: firstly the economically driven way, closely related to neo-liberalism, of what is generally seen as 21st century skills, focusing on the labor market. In this article this way is analyzed as a threat to society. And secondly a way towards a social approach of citizenship in the 21st century, focusing on a society with people that are learning to live together. In the new plans for education in the Netherlands, *OnsOnderwijs2032* (2016) both ways of thinking can be determined, giving space for a renewed way of thinking about what kind of citizens the Dutch society needs in the 21st century.

Introduction: the source and aims of 21st century skills

21st century skills in education are hot. Google gives over 70 million hits in a split second.

Thinking of 21st century education makes you wonder about Ipads, Steve Jobs schools, ICT everywhere. Checking some of these 70 million hits will change this impression. It is more, it is different and the way they are dealt with is a danger for the 21st century.

One of the most popular books on 21st century skills in education is written by Bernie Trilling and Charles Fadel, *'21st century skills, learning for life in our times'* (Trilling & Fadel 2009).

Central focus point of Trilling and Fadel is *'how can we help our students to learn for a job that might be there when they graduate and for solving problems that they might meet in an unsure, quickly changing, competitive and connected world?'* (2009, P. XV). Trilling and Fadel explain that answers from the past no longer are appropriate for the future, due to changes in economy, production methods, energy sources etc.

It is important to know something of the background of the writers. Trilling and Fadel aim to contribute to economical growth, to the quality of the labor force in the 21st century. In their book they explain the relation between economy and education in the 21st century:

'education is now seen as the golden ticket to a brighter economic future' (p. 152). Furthermore: they are both deeply engaged in the ICT business, as is shown in the preface and the list of recommendations in the book. Baring in mind that the book was written in 2008, during a period of a severe financial crisis, this is what one might expect from two ICT experts. In short:

- it's about economical interests; Trilling and Fadell are looking for skills for employees, they do not focus on how to be a citizen, a self-responsible person in the 21st century. They do not wonder what might be needed by society. They focus on the labor market and it's needs from an economic perspective;
- it's American: the impressively long list of sources hardly shows literature from outside the USA.

21st century skills, learning for life in our times is by far not the only book on 21st century skills; and not the only one that is known in The Netherlands. A quick search on the internet, using the search engine of Bol.com as a tool for literature written in Dutch, did give the following hit: *Marzano & Heflebower, Klaar voor de 21e eeuw (Vlissingen 2012, translation of 'Teaching and Assessing 21st century skills', Bloomington USA 2012)*. Marzano & Heflebower write about cognitive skills: analyzing and use of information, coping with complex problems and challenges, creating patterns and mental models; and about conative skills: knowing and controlling yourself, understanding interaction with others (Marzano, Heflebower 2012, p. 17). The reason for all this is explained in the preface (p.9): improve the pupil's outcomes and improve the educational system to support economical and industrial developments. In other words, their work has first and foremost an economical motive. When we look at the content of *Teaching and assessing 21st century skills* from the perspectives as displayed above for Trilling and Fadel, we can conclude that it's about economic interests; and it's American: like Trilling & Fadel, Marzano & Heflebower hardly use sources from outside the USA.

In Dutch education, two more publications on 21st century skills are commonly used.

The first we shall have a closer look on is a discussion paper, written in 2010 by Joke Voogt, professor ICT and curriculum at the University of Amsterdam, NL, and Nathalie Pareja Roblin, researcher at the University of Pittsburgh, USA. They are straightforward in their intentions: in the first chapter (inleiding, p.1 and 2) they reflect on the relationship between economics and 21st century skills, which leads to the phrase that '*...within all these jobs several core tasks are comparable and ask for different, new competences, the so called 21st century skills*'. (Voogt & Roblin, 2010 p.2). There are two interesting conclusions to be made from this quote: (1) Voogt & Roblin use the

words 'skills' and 'competences' for the same content; and (2) they see 21st century skills in an economical perspective.

The research as described in the article is done on five models of 21st century skills (p.5). 4 of them are from the USA, the fifth, NETS, part of ISTE, is an international organization, founded in the USA, governed by a team of USA educationalists, sponsored by Smart, Microsoft and Samsung business (see <http://www.iste.org>). In summary, Voogt & Roblin too write from an American and economical perspective.

The second Dutch publication got its place on the internet in 2012: *21st century skills in het onderwijs, whitepaper versie 1.0*, van Frank van der Oetelaar (<http://www.21stcenturyskills.nl/whitepaper/>)

Oetelaar emphasizes the importance to contribute to the 'knowledge economy' (p.4) and 'living, working and learning in the knowledge society' (p.6). In the next pages he does not refer to the 'living', only to the 'working and learning'. For definitions or concepts of 21st century skills, Oetelaar refers to his website (<http://www.21stcenturyskills.nl/modellen/>). His theory is strongly based on Voogt & Roblin and Trilling & Fadell. By doing so, Oetelaar proves the right of Voogt & Roblin, who state in their preface that all models for 21st century skills converge towards a more or less shared set (Voogt, Roblin p. i). In summary: Oetelaar joins the ranks of the American, economical approaches towards learning for the 21st century.

As a final conclusion we can state that without a reasonable doubt 21st century skills in education are put there for an economical, utilitarian reason; and most of the theory comes from the USA.

In the following we shall challenge both.

The risk of the economical focus of 21st century skills

In November 2014 the Czech economist Tomas Sedlacek was invited to do the 'Van der Leeuw' lecture in Groningen, a yearly event with lecturers of the stature as Iris Murdoch, György Konrád, Daniel Cohn-Bendit, Seymour Hersh and Guy Verhofstadt. The lecture, entitled *'Economics as an Unorchestrated Orchestrator'*, is published on the internet. Sedlacek is very negative about the leading role of economics in western society. For economics, *'outside economics, nothing makes sense....is a field which suppresses all it cannot count'*. Sedlacek points out that there are many valuable things in life that are not countable, such as values (Sedlacek p. 4). Instead of 'the invisible hand of the market' we should follow 'the invisible hand of society' (p.7), because there is no such thing as an invisible hand of the market, *'it's all human'* (p8).

A striking example of the results, though maybe partly, of the following of the invisible hand of the market, is given by Alcinda Honwana. In *Waithood, youth transition and social change* (2012) she

argues that due to globalized neo liberal free market economics and local socio-political developments, nowadays there is a huge amount of young people in the stage of waithood, between school and the start of the first job. Some of these people might stay for always in that waithood position. She sees this period of waithood as one of the major reasons for unrest, revolution, wars in lots of places in the world, from countries in Central Africa and the Middle East to neighborhoods in the western world: *'There is no doubt that young people are a critical indicator of the state of a nation, of its politics, economy and social and cultural life. Although national and regional contexts differ and grievances are diverse, young people's anger derives from deepening social inequalities; they are affected by the same ills created by globalization and failed neo-liberal policies that broke the social contract. As globalized communications raise their expectations, local conditions and public policies push those aspirations out of reach.'* (Honwana 2012, p.8).

Martha Nussbaum, in *Not for Profit* (2010; Dutch translation 2011) states that society for her future does not need people that are lead by economics, but by people that are independent, critical thinkers; people that are able to acknowledge equal rights to everybody, from whatever color, religion, gender etc.; people that care for each other and the environment; people that think from a multiperspective approach; people that are able to think what is good for society, even if it is at the same time not the most economical preferable option for themselves. (Nussbaum 2011, p. 45). And she sees education as a very important tool to achieve this, though it is a majestic agenda (2011, p. 79).

Gert Biesta states that society needs people who are qualified with knowledge, skills, dispositions; and who are socialized as a part of existing orders (Biesta 2014 p. 147). The professional order, to be seen as the economical part, is only one of many orders: political, cultural, religious and so on (p.147). Like Nussbaum, Biesta sees an important role for education in order to educate people towards this qualification and socialization.

Sedlacek, Honwana, Nussbaum and Biesta show us that the economization, utilitarization of society and it's actors, the people, is a threat for all kinds of people who together actually are that society: the 21st century skills emphasis on economics is a dangerous one. We need a reorientation. Nussbaum and Biesta point a way out.

Alternative thinking about what is needed in the 21st century

That way out does not lead us to the USA, but to the results of global cooperation ship, that started in the '90's of the last century. From 1993 till 1996 Jaques Delors, former president of the European Commission, chaired the UNESCO Commission on Education for the Twenty-first Century. The main goal of this commission was to

formulate the needs of society in the 21st century; and explore the task of education. The sixteen members of the commission came from countries all over the world and from different backgrounds, being mostly politicians and/or scientists. The commission was supported by more than one hundred individuals and institutions, again worldwide, to be consulted (p.105). The commission concluded that this diversity was a big advantage, leading in the end to a '*very broad agreement on the overall approach and the conclusions*' (p. 36). In 1996 Jaques Delors presented the final report of the commission: *The Treasure within*. The full report is available on the internet. The commission was principally thinking about the children and young people who will take over from today's generation. (p.13/14). The commission admits that trust in economic progress might lead to disillusionment (p.15). The emphasis should be on *how to live together in a global village* (p.16). People in the 21st century will have to cope with all kinds of tensions (p 17-18):

- between the global and the local;
- between the universal and the individual;
- between tradition and modernity;
- between long-term and short-term considerations;
- between competition and equality of opportunity;
- between extraordinary expansion of human knowledge and human beings' capacity to assimilate that;
- between the spiritual and the material.

All these tensions will lead to very intense changes in the lives of all human beings. According to Delors it is fundamental that people in all their uncertainties should understand respect other people in theirs. The great challenge for society in the 21st century is '*learning to live together*'. And education will have a very important role in achieving this. (p. 22).

The commission understands that in order to achieve this, people should learn to *know* (the knowledge, including selection of what matters, what does not), learning to *do* (skill, including selection of what matters; and cooperation ship); and learning to *be* (including learning to see and accept one's responsibility) (p.23). After these statements, describing the current situation, three desired developments in the 21st century world are worked out (p.39 and further):

- from a local community to a world society;
- from social cohesion to democratic participation;
- from economic growth to human development.

The report, published in 1996, did not change the world immediately. What happened with the report and why this happened, can be read in a reflective article, written by Alexandra Draxler, secretary of the Delors commission, in 2010, published on the Norrag website. According to Draxler, though being mostly an academic

report, it made its way from universities to society, including educational systems; and generated a great deal of interest in the four pillars: learning to know, do, be and live together. It slowly changed thinking about education from the utilitarian, economical, neo liberal viewpoint, based on a strong capitalistic, productivistic approach of the value of education towards a *'deeply humanistic vision of education as a holistic process.... Balancing individual with collective competence'*. According to Draxler, In the end, the report did not change the world, but the content still holds as a pledge for human dignity, equality, idealism (Draxler, 2010).

Learning to live together, ESD and citizenship combined in *Our common future*

Nowadays the influence of the Delors report in The Netherlands can be found in at least two developments: firstly in the stepwise implementation, in a bottom up process, of Education for sustainable development; and secondly in the renewed attention for citizenship. Both developments strongly focus on 'learning to live together'.

Worldwide, the attention for ESD was renewed in 1987, with the publication of *Our common future*, report of the World commission on Environment and Development. The full report is available on the internet. The general aim of the commission was to set a global agenda for change (p.5). The basic message of the report was named after the chair of the commission, Gro Harlem Brundtland, former prime minister of Norway: *'sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs'*.

This, among other developments, lead to the 'decade of education for sustainable development', from 2005 till 2015, with a final congress in Japan. Part of the theoretical framework for the decade was formed by the work of Brundland and Delors.

In his report on the UN Decade of ESD (2012) Arjen Wals, professor in social learning and ESD at Wageningen University, The Netherlands, looks back on developments in the field of ESD, from the Rio Earth Summit of 1992 until 2012. During the decade the concept of sustainable development, the definition, gradually changed from almost exclusively environmental towards focus on environment, natural heritage, culture, society and economy (Wals, 2012, p. 11), in short: from ESD towards (global) citizenship. Wals distinguishes four lenses in this process (p.11):

- an integrative lens, taking a holistic perspective, integrating ecological, environmental, economic and sociocultural aspects of life, leading to more understanding of the complexity of processes towards a more sustainable future;

- a critical lens, questioning predominant and/or taken for granted patterns and routines like the idea of continuous growth, consumerism etc.;
- a transformativ lens, moving beyond awareness towards real change towards more sustainable lifestyles, values, societies;
- a contextual lens, leading to the notion that the concept of sustainability is influenced by time and location, therefore needs to be recalibrated as realitieable to activly improve s and times change.

In a way Wals is anticipating on recent developments in Dutch society regarding the importance of good citizenship and citizenship education. We shall come back to that later.

Competences for the future

The importance of the Delors report *The Treasure within* is emphasized by Wals when he describes a list of competences for educators that are developed by Unece (Wals 2012, p. 54). Unece is the UN economic commission for Europe; and it is remarkable that an economic commission formulates competences for good citizenship that might work contra productive towards economy, focusing on other aspects of developments in life.

The Unece competences were developed in 2011, published by 'Agentschap' on the internet in 2012, in English. They were translated in Dutch by De Hamer&Leusink and published in Dutch, also by Agentschap in 2012. Agentschap then was a Dutch sub-governmental organization promoting sustainable development in The Netherlands. The competences include a paragraph with recommendations for policy makers and curriculum developers on different levels (p.5).

The competences use the four pillars of Delors (Learning to know, learning to do, learning to be and learning to live together) and translate these to three levels of active behavior: holistic approach, envisioning change and achieve transformation (p. 14-15). It is easy to partly recognize the lenses of Wals in these competences.

In *Wereldburger met ketchup (World citizen with ketchup-the Dutch word for 'citizen' is 'burger'-)* Jeroen van der Zant translates these competences, originally meant for educators, into competences for all people, starting with children: competences for pupils regarding world citizenship (vdZant 2012, p. 14). The competences are simplified by De Vries, making them useable as a model for personal reflection regarding citizenship:

	You understand ...	You are able to...	You are....	You get along with others in a way that....
--	-----------------------	-----------------------	-------------	--

Holistic approach	<ul style="list-style-type: none"> *relations between people, nature and economy; *relations between people then, now and in the future; and here and there; *that your vision on the world is yours; and others have a right to have a different vision; *your influence on the future. 	<ul style="list-style-type: none"> *share knowledge, without prejudice, from a diversity of disciplines, locations, cultures, generations; *Look from different perspectives, viewpoints to people and the world; connect people to local and global influences (like democracy, participation, stand up for... etc.). 	<ul style="list-style-type: none"> *an example of thinking and acting with regard of different perspectives, persons, even if they are distant from yours; *an example in thinking about, acceptance of knowledge and opinions from nearby, far away, present and past. 	<ul style="list-style-type: none"> *people from different generations/cultures/locations/disciplines get along in a positive way because of your attitude.
Environmenting change	<ul style="list-style-type: none"> *the causes of negative relations between people, nature and economy (like pollution, poverty, egoism, fear); *the necessity to change the relations between people, nature and economy; 	<ul style="list-style-type: none"> *critically judge changes in society in relation with their impact on the future; *raise awareness of the necessity of change by other people; *inspire towards hope on a great future; *engage people in thinking about future 	<ul style="list-style-type: none"> *able to actively improve the life of others socially, ecologically and/or economically ; *able to act deliberately, even in uncertain situations. 	<ul style="list-style-type: none"> *positive opinions about a better future for all are actively supported; *developments in the direction of a better future for all are actively supported.

	<ul style="list-style-type: none"> *the importance of thinking about impact on the future before you make choices; *the importance of being able to cope with change; *the importance of a scientific approach in thinking about the future. 	<ul style="list-style-type: none"> results of activities in the present; *use examples of relations between people, nature and economy in thinking and talking about the future. 		
Achieve transformation	<ul style="list-style-type: none"> *why education in the future needs to be different; *why learning in the future needs to be different; *the importance of working from the perspective of 'the other' as a basis for change; *that working from realistic situations (gardening, social work etc) improves learning and the use of 	<ul style="list-style-type: none"> *explain why education in the future needs to be different; *explain why learning in the future needs to be different; *explain why it is important to learn how to cope with change; *explain the importance of working from the perspective of 'the other' as a basis for change; *explain the importance of working 	<ul style="list-style-type: none"> *able to critically discuss about activities with a negative impact on the future; *able to actively participate in learning processes; *a self-critical and self-reflective thinker, especially regarding your acting and impact of it on others and the world; *a source of inspiration for 	<ul style="list-style-type: none"> *activities with a negative impact for the future are critically discussed and changed into positive action; *people through dialogue learn how to clarify their opinions about the world; *people through dialogue are supported in exploring and acknowledging opinions of others

	what is learned.	from realistic situations.	others regarding thinking about acting and impact of it on others and the world; *striving towards a positive connection with others.	(waaw, there are other possibilities then mine....); *people through dialogue are supported in exploring and acknowledging frames of references of other people (waaw, there are....).
--	------------------	----------------------------	--	---

These competences are meant to be used by educators. And they reflect all kinds opinions about good citizenship in the 21st century as meant by Delors: 'learning to live together'.

Dutch developments

In The Netherlands thinking about 'good citizenship', it's meaning and how to deal with it in education, became popular in the beginning of this century, as a result of a growing tension in society in the field of multiculturalism. In The Netherlands this was a long ignored topic, politically dangerous to discuss because of the risk of losing votes. It was put on the agenda in 2000, by Paul Scheffer. For an overview of the discussion, one can check the internet: for those reading Dutch a good place to start is the NRC site 1995-2001; for others, a brief introduction of the discussion is given in English on Wikipedia: *Multiculturalism in the Netherlands*. The discussion today lingers on, is getting stronger because of the current refugee situation.

An example of a part of this discussion is written in a Dutch newspaper, NRC, September 2007. A governmental commission presented the results of an advisory report, 'identification with The Netherlands'. Queen Máxima, then princess and being an immigrant asked for a reaction on the report, stated that she 'had not discovered the Dutch identity'. She got lots of comments from all kinds of players in the field of politics, sciences, socio-cultural life in The Netherlands (NRC 2007).

What makes a citizen a good citizen in the 21st century, according to the Dutch people?

Around the turn of the century the Dutch government, realizing that against the background of plurification of society, facing all kinds of

new cultures in The Netherlands, in the field of citizenship improvements were needed. The Dutch educational system was one of the carriages to ride these improvements home. After much discussion on all kinds of levels a new set of core objectives for primary and secondary education were formulated and became compulsory by law in 2009. In this article we shall focus on the objectives for primary education as published on the SLO website (SLO is the official Dutch organization for curriculum development). In the field of science and humanities -until then History, Geography, Science and Health Education- a new chapter, 'domain', was added: People and Society. In the explanation can be read: *'This domain deals with themes from society such as health, environment and consumer's behavior.'* When we have a closer look at the actual objectives for People and Society, we read much more than that (SLO/Tule, 2009):

- pupils learn how to take care for the physical and psychological health of themselves and others;
- pupils learn how to act self-reliant in social contexts, as a participant in traffic and as a consumer;
- pupils learn essentials of Dutch and European civil governments and political structure and the role as a citizen;
- pupils learn how to act with respect for general accepted ethics and values;
- pupils learn essentials of religious denominations that are important in the Dutch multicultural society, the learn how to respectfully take care of sexuality and diversity, including sexual diversity;
- pupils learn how to respectfully take care of the environment.

This is not only about health, environment and consumer's behavior; this is about citizenship the way Delors meant it, 'live together', with a touch of Dutchness and Europeanism.

As an illustration of the latter, the new core objectives on history, also on the SLO/Tule site, were not formulated anymore from a pluriform view on world history, but replaced by a narrow, Dutch centered focus: a division into ten periods in time, based on the Dutch history, not useable for any approach of world history; and a 'canon' of fifty topics from Dutch national history. This makes it possible that children leave primary education with some knowledge of the first 'Dutch' written manuscript (check out www.entoen.nu for all fifty topics), but no clue whatsoever about Egyptian pyramids or Marco Polo, unless the teacher introduces it despite the general aims (De Vries, in Kleio 2007, p. 16-17).

The chances that a teacher does so, are not too big. Topics that are not deliberately connected to the national aims are often neglected by Dutch teachers; and even when they are part of national aims but

rather new to teachers, the chances that they will get attention are small, as shown by research that De Vries did on implementation processes in the field of sustainability, officially not explicitly written down in the Dutch core objectives. His general conclusion from research in 23 Dutch primary schools, using the Prisme analysing system, was that in most schools something, but nothing structural happened; and that schools did score higher on criteria when external drives like governmental control or textbooks were decisive (De Vries, LTM 3-4 2014, p. 34).

The general aims for primary schools give some insight in what the Dutch government in 2009 meant with citizenship. In the meantime new developments in The Netherlands are taking place. Sander Dekker, vice minister of education, in 2015 started a nationwide discussion about what education in 2032 should be. The results were published under responsibility of a commission chaired by the already mentioned Paul Schnabel, nowadays member of Parliament and professor in sociology in Utrecht. Though not deliberately asking for criteria on citizenship in 2032, lots of people came up with ideas that can be related to it. As a result, the final report, *OnsOnderwijs2032, eindadvies* (Our Education 2032, final advise), published in January 2016, has a special chapter about citizenship (p.34). The core message there says: *'for all schools, despite their religious orientation or pedagogical ideas, it is a mission to teach young people how to function in a democratic society. It is a shared responsibility to keep the core values of the democratic state, governed by laws, alive, as well as to promote and increase knowledge of organization of government and democracy and existing applicable rules.'*

Though there are similarities between this message and the general aims of 2009, the strong emphasis on 'democracy' is striking. And there is less emphasis on 'national' citizenship in this chapter. For the commission Schnabel, citizenship has to do with:

- orientation on shared values;
- democratic attitudes;
- living and working together;
- adjusting to rules;
- shaping an opinion with respect for other opinions;
- finding a decent place in society;
- discover what contribution can be made to the neighborhood, region, country, world. (OnsOnderwijs2032, p.35).

On the next page the importance of the democratic state, based on and regulated by laws, again is emphasized, together with respect and attention for human rights -including children's rights- in daily life, social skills and codes of behavior and social responsibility (p. 36).

In the next chapter, 'knowledge of the world', some more notions concerning citizenship are mentioned, including elements of national awareness:

- knowledge matters: citizenship is not only about attitudes, you need to know about what is going on to understand how to behave like a (world) citizen;
- a multiperspective view is crucial to understand other people, other places; and one selves;
- a cultural fundament is important to know how the Dutch history and identity did develop; this matters because you have to know your history to understand the future; it is all about developments in time;
- a holistic, interdisciplinary approach matters: the society is complex; and will be more complex in 2032; people need to know how to cope with that complexity;
- as part of that holistic approach it is important to see connecting factors, wider perspectives, meaning and purposes, related to actual, realistic situations (p. 40).

Reading this, one might think that Schnabel and his commission did learn Delors by heart; and used that knowledge for their report. However, this is by no means true. The Delors report is not part of the list of sources, used as starting point by the commission. Several reports of the OECD, organization for economic co-operation and development are. Witch brings us back tot the economical, utilitarian way of thinking.

In a way, it is a miracle, or a deliberate wish of the Dutch people that joined the national discussion, that citizenship on such a fundamental level is part of OnsOnderwijs2032 and hopefully will be part of education in 2032, in order to raise citizens that are able to live together. In another way it might prove the right of Draxler (2010): the thinking of Delors c.s. did find it's way through society.

Conclusion: What kind of citizens are needed in The Netherlands the 21st century?

Worldwide two major ways of thinking about what people are needed in the 21st century can be recognized:

- the economically, utilitarian, productivisitc driven way, closely related to neo-liberalism, of what is generally seen as 21st century skills.

We analysyed the sources of this way of thinking and came to the conclusion that they are mainly coming from ICT scientists in the USA. The work of Trilling&Fadel (2009), Marzano&Heflebower (2012) and others was used as examples of what these 21st century skills are and where they come from. We showed that this way of thinking can be seen as a threat to society. The work of Sedlacek (2014) and Honwana (2012) was used as an example of what is going wrong

worldwide and in our deprived neighborhoods. Biesta (2013) and Nussbaum (2010) showed alternative needs for society and education.

- the way towards a social approach of citizenship in the 21st century, as set out by Brundtland (1987) and Delors (1996).

The source of this way of thinking is embedded in Unesco, working from world-wide perspectives. The major focus of this way of thinking is: learning to live together. The wide spread of the Unece competences (2012) and developments in the field of education for sustainable development as described by Wals (2012) are supportive to the implementation in society, specially in education, of ideas, knowledge and attitudes about ESD and (world) citizenship.

In the new plans for education in the Netherlands, OnsOnderwijs2032 (2016) both ways of thinking can be determined, giving space for a renewed way of thinking about what kind of citizens the Dutch society needs in the 21st century: we need people that are able to live together in a Dutch orientated society. For those who find this a positive development: the future years will learn us how this works out against a background of new nationalism in The Netherlands, fed by feelings of 'nativism' (Duyvendak 2013).

References

- Biesta, G., *The Beautiful risk of Education*, Boulder USA 2013.
- Brundtland, G.H., *Our common Future*, Unesco Paris 1987.
- Delors, J. a.o., *Learning the treasure within*, Unesco Paris 1996.
- Draxler, A., *The Delors commission and report*, Norrag website 2010.
- Duyvendak, J.W., *Nieuw nationalisme in Nederland*, lecture UvA, Amsterdam, internet 2013.
- Honwana, A., *"Waithood", youth transitions ans social change*, Rotterdam 2012.
- ISTE, on <http://www.iste.org>, internet xxxx
- Marzano & Heflebower, *Klaar voor de 21e eeuw*, Vlissingen 2012, translation of *'Teaching and Assessing 21st century skills'*, Bloomington USA 2012.
- NRC.NL, *Maxima: 'Nederlandse identiteit nog niet ontdekt'*, NRC website 2007.
- NRC.NL, *de multiculturele samenleving*, NRC website 1995-2001.
- Nussbaum, M., *Niet voor de winst*, Amsterdam 2011, translation of *Not for Profit*, Princeton USA 2010.
- Oetelaar, Frank van der , *modellen voor 21st eeuws leren* internet 2012 (<http://www.21stcenturyskills.nl/modellen/>)
- Oetelaar, Frank van der, *21st century skills in het onderwijs, whitepaper versie 1.0*, 2012 (<http://www.21stcenturyskills.nl/whitepaper/>)
- Peperzak, A. T., *Het menselijk gelaat*, essays van Emmanuel Lévinas, Baarn 1978.
- Platform Onderwijs2032, *Ons Onderwijs 2032*, eindadvies, Den Haag 2016.

- Sedlacek, Tomas, *Economics as an Unorchestrated Orchestrator*, Van der Leeuwlezing Groningen 2014, http://vanderleeuwlezing.nl/sites/default/files/Tekst%20lezing%20Tomás%20Sedláček_0.pdf
- SLO/Tule, *kerndoelen*, website SLO, internet 2009.
- Trilling, B. & Fadel, F., *21st Century skills, learning for life in our times*, San Francisco USA 2009.
- Unece, *Learning for the Future*, Utrecht, internet 2012.
- Voogt, Joke & Roblin, Natalie Pareja, *21st century skills, discussienota*, Enschede The Netherlands, internet 2010,
- Vries, G.J. de, *Prise, tool for assessment and evaluation in ESD*, in Learning Teacher Magazine 3-4, Sweden 2014.
- Vries, G.J. de, *Terug naar de jaren vijftig, vernieuwde kerndoelen voor het geschiedenisonderwijs*, in Kleio juni 2007.
- Wals, A., *Shaping the education of Tomorrow*, Unesco Parijs 2012.
- Wikipedia, *Multiculturalism in the Netherlands*, internet 2013.
- www.entoen.nu, *de canon van Nederland*, internet 2006.
- Zant, J. van der, e.a., *Wereldburger met Ketchup*, Amsterdam 2012.

CHAPTER 4.

DIFFERENT APPROACHES OF EXPERIENTIAL EDUCATION

4.1. THE REGGIO EMILIA APPROACH

MARINA TZAKOSTA

Basic characteristics

This approach is named after the city where it was developed, Reggio Emilia, with approximately 130.000 inhabitants. What is remarkable about this town is that it has invested more than 10% of its budget in high quality preschool education services to its citizens (Edwards et al. 1993). The main characteristic of the Reggio Emilia Approach, which was introduced after the end of World War II and has attracted the interest from all over the globe, is the various ways of application of democracy to education drawing on fundamental ideas of the works of the American philosopher and psychologist John Dewey (cf. 1916, 1938).

The Reggio Emilia Approach was first introduced by the teacher Loris Malaguzzi in the early 60s'. Malaguzzi's belief was that education should be able to integrate children's (possibly more than a) hundred languages (cf. Edwards et al. 1993). The term 'hundred languages of children' corresponds to the different and various ways children have to and should express themselves. More specifically, children are supposed to be independent human beings who are knowledge bearers, who have rights, who should be given all kind of opportunities to develop their potentials and should be encouraged to openly express their ideas and feelings. To give an example, in the Reggio Emilia approach children are encouraged to depict their understanding through symbolic languages and forms of expression such as drawing, writing, (dramatic) play, fine arts. Teachers encourage children to revise, modify and repeat the activities in the process of better understanding the topic under investigation and improving learning (cf. Edwards et al. 1998). Children are viewed as part and members of a community rather than being evaluated in isolation (Gandini 1993).

The philosophy underlying the Reggio Emilia approach is summed in the following traits:

- Children should have some control over the form and content of their learning
- Children should be able to learn through their senses and their experiences
- Children are expected to have relationships with other children
- Children are expected to relate to items which they can explore
- Children should be allowed to express themselves in various and different ways (cf. Hewett 2001)

One of the most challenging aspects of the Reggio Emilia approach is the solicitation of multiple points of view regarding children's needs, interests, and abilities, and the concurrent faith in parents, teachers, and children to contribute in meaningful ways to the determination of school experiences. Teachers trust themselves to respond appropriately to children's ideas and interests, they trust children to be interested in things worth knowing about, and they trust parents to be informed and productive members of a cooperative educational team. The result is an atmosphere of community and collaboration that is developmentally appropriate for adults and children alike.

The role of the environment

Environment is also placed in the center of the Reggio Emilia philosophy. It is often referred to as the 'third teacher' (Cadwell 1997). The idea is that new ample open to view spaces are created, old ones are renovated and remodeled, classrooms are filled with plants, children's works and their writings are displayed everywhere. Each classroom is part of the school and not isolated, for example, classrooms are connected through telephone lines or passageways (Tarr 2001). The school becomes part of the community and not outside of it. The environment is important because it allows children relate to the world and establish relationships with the environment and other children/ people (Cadwell 1997).

The role of the teacher

In the Reggio Emilia approach, education is child-centered and not teacher-centered. In that sense, the teacher is a co-learner and not (only) an instructor. Teachers are supposed and expected to facilitate children's activities and encourage and support their learning. Therefore, the teacher is inside the learning process and, for this reason, the child becomes totally aware of the topics being taught (Hewett 2001). A necessary prerequisite for the accomplishment of the above is that children stay with the same teacher for at least a three-year period in order to ensure mutual trust and avoid added

pressures created by having to continuously establish new relationships.

As far as the curriculum is concerned, teachers are autonomous and are encouraged to apply their teaching ideas, methods, strategies and practices in class. Curriculum planning and implementation revolve around open-ended and often long-term projects based on child-initiated learning activities. In other words, all topics of interest are formulated by the children. Therefore, teachers are not backed up by curriculum guidelines or achievement tests; rather, they are responsible for their curriculum planning.

The role of the parents

As already mentioned above, within the Reggio Emilia approach schools are part of the community. Consequently, parents and families could not be excluded from the learning and teaching process. Communities are also involved since they financially support the teaching programs.

Like teachers, parents are viewed as the children's partners and collaborators. As a result, parents can participate in school discussions, school activities, even be responsible for the successful accomplishment of the latter. Parents may even make proposals regarding curriculum planning and evaluation. Conversely, aspects of the school life are expected to be incorporated in the family life.

'Vehicles' for learning

Teaching applied in Reggio Emilia schools mainly takes the form of projects. Projects provide children with the chance to observe, explore, test, assess, question, discuss and clarify their understanding (Forman 1996).

Project topics must be derived from children's play and teachers' observations of children's play and should be related to social concerns. Projects which are successfully carried out challenge children's creative thinking and problem solving. Working groups should consist of children coming from different backgrounds – including children with special needs - and various interests. The main disadvantage of applying the project approach in class is that children are given opportunities to make connections between prior and new knowledge while engaging in authentic tasks.

References

- Cadwell, L. 1997. *Bringing Reggio Emilia Home: An Innovative Approach to Early Childhood Education*. New York: Teachers College Press.
- Dewey, J. 1916. *Democracy and Education: An introduction to the Philosophy of Education*. New York: MacMillan.
- Dewey, J. 1938. *Experience and Education*. New York: Kappa Delta Pi.

- Edwards, C., L. Gandini & G. Forman (eds.). 1998. *The hundred Languages of Children*. Reggio Emilia.
- Forman, G. 1996. The Project approach in Reggio Emilia. In C.T. Fosnot (Ed.). *Constructivism: Theory, Perspectives and Practice*. New York: Teachers College Press. 172-181.
- Gandini, L. 1993. Fundamentals of the Reggio Emilia approach to early childhood education. *Young Children* 49.1. 4-8.
- Gandini, L. L. Hill, L. Cadwell & C. Schwall (eds.). 2005. *In the Spirit of the Studio. Learning from the Atelier of Reggio Emilia*. New York/ London: Teachers College Columbia University.
- Hewett, V. 2001. Examining the Reggio Emilia Approach to Early Childhood Education. *Early Childhood Education Journal* 29.2. 95.110.
- Rinaldi, C. 2006. *In Dialogue with Reggio Emilia. Listening, Researching and Learning*. London/ New York: Routledge.
- Tarr, P. 2001. Aesthetic codes in early childhood classrooms: what art educators can learn from Reggio Emilia. *Art Education* 54.3. Retrieved from http://www.designshare.com/Research/Tarr/Aesthetic_Codes_1.htm.

4.2. THE HIGSCOPE APPROACH: LEARNING THROUGH ACTION

CRISTINA MESQUITA

The HighScope curriculum is a preschool pedagogical approach that offers kindergarten teachers a set of ideas and practices supported by the children development, as they value the action of their learning process (Hohmann & Weikart, 2007).

This approach emerged from the work developed by David Weikart and his colleagues in the Perry Preschool Project, from the idea that preschool education was the educational base to prevent educational failures of the children from poor areas (Schweinhart & Weikart, 2010).

According to Schweinhart and Weikart (2010), the HighScope curriculum has, through the time, established a few conceptual lines that make this an approach under constant update. The program was supported, since the beginning, on John Dewey progressive education and on the child development theories of Jean Piaget². More recently, it also incorporates the contributions of sociocultural work by Lev Vygotsky

² To analyze the curricular evolution of the HighScope approach and its theoretical support *vide* Oliveira-Formosinho (2007a). The High-Scope curricular model contextualization in the scope of the Projecto Infância, In J. Oliveira-Formosinho (org.), *Modelos Curriculares para a educação de infância: construindo uma práxis de participação*, (pp.41-92). Porto: Porto Editora.

(1991), the cognitive and development psychology, in particular on the studies developed by Clements (2004) Gelman and Brenneman (2004), the National Research Council (2005) and on the ideas of Shore (1997) and Thompson and Nelson (2001) (quoted by Schweinhart & Weikart, 2010).

In the HighScope approach, the child is recognized as an active learner, that learns better from the activities that herself plans, develops and reflects on. As Hohmann and Weikart (2007) state, the “learning through action is defined as the learning in which the child build new understandings based on her actions on the objects and on the interaction with people, ideas and events” (p. 22). This kind of learning is considered, by the authors, as necessary to the cognitive restructuring and development.

In the HighScope approach, the educational intentionality is greatly valued. For the child to learn, she has to experience the world, reflect on it and create meanings from these experiences. The intentionality refers to the way adults interact with children and how they establish authentic relations, based on the construction of a shared thought (Epstein, 2007b). All the curricular structure of the approach is intentionally structured to support active learning. The HighScope approach favours the active learning centred curriculum and the children active and participative learning, as explained next.

The interactions and the role of the kindergarten teachers

The teachers, like children, are considered as active learners. Through evaluation and daily planning, considering the Key Developmental Indicators (KDIs), adults access children's experiences and continually assess the learning environment to appropriate the overall picture of the interests and abilities of each one. Teachers are educational support, observing the interactions of colleagues with children and thinking collaboratively about the actions of each one challenging in this way, their continuing professional development (Schweinhart & Weikart, 2010).

One concern of educators is to build a learning environment that encourages the confidence, the autonomy and the initiative of children. There are five key ingredients to guide educators in this goal: i) the organization of spaces and materials, considering its abundance, age appropriateness and the possibility for having different uses. This point is related to the piagetian idea that learning takes place through the direct action of children with the materials (Piaget, 1983); ii) the active manipulation of objects, considering that when children has direct experiences with materials, they have the opportunity to explore, with all the senses, combining and transforming its initial use; iii) the choice, allowing the children to decide what they want to do, because the learning results from the attempts children make to defend their interests and follow their

objectives; iv) the enhancement of communication language and the child's thinking. Children communicate their ideas, needs, feelings and discoveries through their emotions, facial expressions, sounds, gestures and words. Adults value and encourage these forms of expression, establish proximity and security relationships with children; v) the adult, as scaffold, recognizes and encourages the intentions, actions, interactions, communication, exploitation, problem solving and creativity of children (Lockhart, 2011).

Daily routine

To create an environment in which children actively learn is important to design a consistent daily routine. This daily routine, in the HighScope approach, takes place in specific time segments corresponding to certain activities that children have to do, like plan their activities, interact in large groups, implement their plans to play in the schoolyard, eat or rest (Hohmann & Weikart, 2007). The following elements are considered.

Plan-do-review sequence (planning time, work time, recall time)

In the Highscope approach the sequence plan-do-review is a key element for the active learning. It includes all the fundamental aspects of that activity: the materials, the handling, the choice, the language, the communication and thinking. Children plan, make choices, think about the possibilities of the materials as they reflect on their actions with the support of adults (Hohmann & Weikart, 2007).

This cycle starts with a time to **plan**. Preschoolers are able to make choices, to decide actions and act deliberately on the materials. In this regard, a plan is necessary for children to think on them systematically.

The time **to do**, in the cycle plan-do-review refers to the moment when children put in action their intentions. It is the time of greatest length of the day, in which children embody their intentions, play and solve problems.

Afterwards it is the time for remembering the original plan developed during the working time. The time to **reflect**, in HighScope approach, goes beyond the mere description of their work. Engaging children for thinking requires the adults' stimulation that makes them aware of the learning they have done, the interests that this experience caused in them, how they can extend that activity, anticipating ideas for the next day (Schweinhart & Weikart, 2010). The reflection promotes the broadening of the knowledge that can be used in other situations (Epstein, 2003).

Small-group time

During small-group time, a group of six to eight children is with an adult to experience, explore, work with materials and talk, offering a

variety of active learning experiences. Adults they plan learning experiences, considering the interests and needs of children, the exploitation of a new material or problem solving (Hohmann & Weikart, 2007).

Large-group time

At the time of large-group, everyone, children and adults, gather to play games, sing songs, perform movement activities, playing instruments or listening to a story. At this time the children can participate and share ideas with colleagues, or follow the ideas of the others. The adults, regard the large-group time as an opportunity for share common experiences with children. Adults organize learning experiences, structuring them in order to share the lead with the children, encouraging their participation (Schweinhart & Weikart, 2010).

The Key Developmental indicators (KDIs)

The development of children, in HighScope approach has reference to a set of key indicators established from research on developmental theories.

The HighScope³ curriculum identified 58 KDIs in eight content areas: approaches to learning; social and emotional development; physical development and health; language, literacy, and communication; mathematics; creative arts; science and technology; social studies (in <http://www.HighScope.org>).

The KDIs is a flexible system built from the assumption that children's development takes place in a *continuum* and that children have rhythms and different levels of development. Indicators are reference points for the educator to know which way to go with each child that must be articulated with the principles listed above, inherent in a participatory and active learning.

Child Observation Record (COR)

The Child observation record (COR)⁴ is an instrument that provides comprehensive information on the continued development of children. It can be used at any developmental line program (HighScope Educational Research Foundation, 2003; 2005).

The COR for preschoolers is organized in six categories representing the major areas of child development: initiative, social relations, creative representation, movement and music, language and literacy, mathematics and science. The children is observed in

³ For a more detailed Reading on the HighScope curriculum, vide <http://www.HighScope.org/Content.asp?ContentId=566>.

⁴ There are two COR instruments, one destined to baby observation (0-2 years old) and another for preschoolers observation (3 to 6 years old).

various items (3-8) in each category, describing important behaviours of the developmental level.

In the HighScope approach, all aspects are essential to the delivery of the researched outcomes. These include the focus on supporting play and children's interests; the commitment to active learning; the child choice and sharing control with children; the focus on children's strengths; the focus on the environment including the materials and resources used; the plan-do-review sequence; the six step problem solving approach to social conflict; the flexible but predictable daily routine; the regular small and large group activities; the KDIs and the COR; the focus of teachers on authentic relationships with children and families; the intentionality of the teacher and the daily professional conversations between staff.

References

- Epstein, A. (2007b). *The Intentional Teacher: Choosing the Best Strategies for Young Children's Learning*. Washington, DC: National Association for the Education of Young Children.
- Epstein, A. (Spring de 2008). *Understanding High/Scope Curriculum "Content Areas" and "KDIs"*. Obtido de HighScope, Resource Reprint: <http://www.HighScope.org>
- HighScope Educational Research Foundation (2003). *High/scope Child Observation Record (cor) For Ages 2 1/2 - 6*. Ypsilanti, Michigan: HighScope Press.
- HighScope Educational Research Foundation (2005). *Child Observation Record (COR): Information for Decision Makers*. Ypsilanti, Michigan: HighScope Press.
- Lockhart, S. (2011). *Active Learning for Infants and Toddlers: Even the youngest children actively engage the world around them*. HighScope ReSources, 5-10.
- Hohmann, M. & Weikart, D. (2007). *Educar a Criança*. Lisboa: Fundação Calouste Gulbenkian.
- Piaget, J. (1983). *Seis Estudos de Psicologia*. Lisboa: Dom Quixote.
- Schweinhart, L. J. & Weikart, D. (2010). *The HighScope Model of Early Childhood Education*. In J. Roopnarine & J. E. Jonhson, *Approaches to Early Childhood Education* (pp. 191-212). Upper Saddle River, NJ: Merrill.
- Vygotsky, L. (1991). *A Formação Social da Mente*. São Paulo : Martins Fontes.

4.3 PERSPECTIVE OF THE MODERN SCHOOL MOVEMENT

ROSA NOVO

The information that appears systematized in this subchapter comprises two key aspects: the first is a brief contextualization of the Modern School Movement (MSM), and the second concerns the contributions of this pedagogical model for experiential learning.

The MSM, whose origin and development date back to the 1960s, is an association of educational practitioners intended for cooperative self-training of its members and to support in-service training and pedagogical animation of educational institutions. This movement comprises a network of regional groups which act as cooperative working groups for the training and development of educational resources in several areas of formal education. Within its scope a quarterly journal named *Escola Moderna* is edited. It works simultaneously as an informative and dissemination bulletin of pedagogical practices (Nóvoa, Marcelino, & Ramos do Ó, 2012).

Sérgio Niza, the founding member of the Movement in Portugal, states that "(...) when you shape the profession you are shaping the pedagogy because they are no two separate things (...) There is a kind of movement, of dialectic, of dialogue between the construction of the profession and pedagogy (...) it is a dialogue with the contexts of practical life and of the constructed knowledge" (1998, cited by González, 2002, p. 111).

From this quote one can easily infer that the author defends the 'pedagogical isomorphism' perceived as a methodological strategy which consists of experiencing through the entire educational process. These experiences include attitudes, methods and procedures, technical resources and organizational structures that are intended to be performed in the effective professional practices of teachers. It is through this interaction dynamics, communication and shared reflection on the practices in all degrees of education that everyone understands their professional path. As a result, the Movement itself advances in the construction and reconstruction of its pedagogy (Nóvoa, Marcelino, & Ramos do Ó, 2012).

Thus, it can be said that what substantially distinguishes the pedagogy of the MSM is the progressive way that it negotiates, establishes, manages and evaluates the life of the group or class with the children themselves. This refers also to the space, the time, the learning contents and social relations (Grave-Resendes; & Soares, 2002; Folque, 2012).

In this perspective, the experiential learning embodies a social and centered interaction that structures the communication, the cooperation, and the negotiation between adult and child and children among themselves. In fact, the Movement's purposes in this aspect are based on: (i) the communication circuits; (ii) educational cooperation structures; and (iii) "on direct democratic participation". All of these sustain both the way they organize the work in the classroom regarding time and space, as well as the learning pathways supported by several piloting instruments that help to regulate what happens in the classroom and which are viewed as a memory of the life of the group.

In this way, experiential learning is founded and develops within a democratic organization through three strategic guidelines.

One guideline is the transition from personal experience to the *à posteriori* didactics, i.e. it is essential to have the children's previous experiences as a starting point to make sense of new constructions. This means to assume that access to new knowledge is built according to the starting point of each individual, but in a multitude of processes within the classroom group he/she it belongs to.

Another guideline is the need to strengthen the awareness of the production processes, since they are essential to their understanding (from the production to the understanding). The focus on reflecting upon the action provides awareness from the child about its experience, helping him/her to evolve into more advanced levels of understanding.

Finally, intervention also appears as crucial, since its validity will only have meaning if it is socially communicated (from speech to communication). So, experiential learning is not only an individual construction, since it is systematically extended to the entire group where children are encouraged to communicate. When the child explains before the others and the adult what he/she did and how it was done, the child does not only gain consciousness of the action, but also realizes how things proceeded in terms of advances and drawbacks. This allows for a better perspective and new ways to do better or to go further in exploring his/her ideas when challenged by the comments made by peers and by the adult.

The focus on experiential learning enhanced by a public scrutiny in the group shows that more than instructing oneself, it is first of all a way to reflect, to be able to tell about it and to conceptualize it. This means that experiential learning gains from complex processes of negotiation of meaning, through organizational strategies and communication circuits.

It is important to stress that this pedagogical model requires a professional learning that shows that the trainee progressively needs to assume himself as a promoter of the participated organization, as

a facilitator of cooperation, as a civic and moral animator and also as an active auditor (Niza, 2013).

References

- Folque, A. (2012). *Aprender a Aprender no Pré-Escolar: O modelo pedagógico do movimento da escola moderna*. Lisboa: Fundação Calouste Gulbenkian.
- González, P. (2002). *O Movimento da Escola Moderna: um percurso cooperativo na construção da profissão docente e no desenvolvimento da pedagogia escolar*. Porto: Porto Editora.
- Graves-Resendes, L., & Soares, J. (2002). *A Diferenciação Pedagógica*. Lisboa: Universidade Aberta.
- Niza, S. (2013). O Modelo Curricular de Educação Pré-Escolar da Escola Moderna Portuguesa. In J. Oliveira-Formosinho. (Org.). *Modelos Curriculares para a Educação de Infância – Construindo uma praxis de participação* (pp. 141-160). Porto: Porto Editora.
- Nóvoa, A.; Marcelino, F., & Ramos do Ó, J. (Org.) (2012). *Sérgio Niza, escritos sobre a educação*. Lisboa: Edições tinta-da-china, Lda.

PART B.

**INTERNATIONAL RESEARCH REPORT
ON
EXPERIENTIAL LEARNING APPROACHES**

CHAPTER 5.

INTERNATIONAL RESEARCH REPORT ON EXPERIENTIAL LEARNING APPROACHES

Zeynep ALAT, Kazim ALAT,
Violeta KAMANTAUSKIENE, Gianina-Ana MASSARI,
Florentina-Manuela MIRON, Cristina MESQUITA, Marina
TZAKOSTA, Jan Karel VERHEIJ, Tija ZIRINA

OBJECTIVE NO. 1: RESEARCH SURVEY REPORT

Title:

Carrying out a Research survey on Experiential education practices (children aged 3-12) in partner countries LT, LV, TR, NL, PT, RO, GR

Description:

Project partners from 7 countries carry out a quantitative (via online questionnaire) and qualitative (via interviews) research on Experiential education practices (how much it is used, what forms, in what subjects). Research aims at identifying similarities and differences, good practice to share and problematic areas. Research results will be used when planning lectures for teachers and teacher trainers in the next project stage.

Tasks and role of each organization

All project partners were involved in carrying out the research. Ondokuz Mayıs university leads WP2 Research Survey and was responsible for designing the questionnaire, data analysis and report composition. Other partners contributed with collection of the data.

Leading Organization for the Activity

ONDOKUZ MAYIS UNIVERSITY

CLASSROOM PRACTICES OF TEACHERS OF YOUNG CHILDREN: A COMPARATIVE STUDY CONDUCTED IN GREECE, LATVIA, LITHUANIA, PORTUGAL, ROMANIA, AND TURKEY

Success of any educational program is vitally linked to teachers' beliefs and practices (Copple & Bredekamp 2009). Presence of a perfect curriculum or physical conditions would not mean much unless teachers are endowed with necessary knowledge, skills, and attitude, which shine in their daily teaching practices (Copple & Bredekamp 2009). It is widely recommended by educational scholars to avoid heavy reliance on basic-skills oriented teaching that focuses on instilling certain skills under strict teacher tutelage in an environment where children are expected to take a passive role and suppress their individuality (Stipek & Byler, 1997). Instead, educators are advised to replace those ineffective practices with child-centered pedagogy, as recommended by National Association for the Education of Young Children (NAEYC), which endorses practices that allow children to build their own knowledge and competencies (Copple & Bredekamp 2009). Prominence of play in children's learning and development is highly recognized within this paradigm (Bowman, Donovan, & Burns, 2000; Copple & Bredekamp 2009). Unfortunately, educational reform does not occur overnight even if legislative dimensions are already set. It is teachers who are mainly responsible for implementation of new practices in educational settings. Therefore, without paying close attention to teachers, especially the ways they provide education in their classrooms, visions of policy makers who yearn for excellence following what research recommends would be destined to fade away in the oblivion.

Teacher qualifications in the countries involved

It seems that importance of teacher qualifications are widely recognized by the policy makers in almost all of the countries where this study was conducted. A bachelor's degree with a three or four-year-study is a prerequisite for employment in ECE settings serving older children in all of the countries except Latvia where post-secondary non-tertiary level education is the minimum level of education looked for in a preschool teacher. As far as professional development, teachers of young children in all of the countries, except those in Greece, are required to attend continuing professional training activities (European Commission/EACEA/Eurydice/Eurostat, 2014). In some countries, teachers, even have to receive formal training in administration as well as ongoing inservice trainings if they wish to climb the career ladders and become head of institutions.

It is a worldwide trend that teaching young children is a profession that attracts mostly women. This is especially true for the countries Greece, Latvia, Lithuania, and Romania and the Netherlands in the study. Portugal and Turkey have, although not dramatic, higher rates of men employed in the field ranging from 5 and 7 % (European Commission/EACEA/Eurydice/Eurostat, 2014).

Table 1. Qualifications required for educational staff working with older children in early childhood settings.

	Teachers	Directors
Greece	Bachelor's degree (four years)	Bachelor's degree + Professional experience
Latvia	Post-secondary non-tertiary level	Bachelor's degree + Professional experience & administrative experience
Lithuania	Bachelor's degree (three years)	Bachelor's degree + Professional experience & administrative experience
Portugal	Master's level	Master's degree + Professional experience
Romania	Bachelor's degree (three years)	Bachelor's degree + Professional & administrative experience & special training
The Netherlands	Bachelor's degree	Bachelor's degree + Professional experience
Turkey	Bachelor's degree (four years)	Bachelor's degree + Professional experience

National guidelines

As decades of solid research proves again and again immediate and the long term benefits of early education both for individual citizens and indirectly for a country's welfare, education of young children has been receiving very well deserved attention from the state governments in the last decades. With a goal to better prepare young generations for schooling, many European states have adopted a formal framework that guides educators and administrators in their efforts to meet the needs of young children (European Commission/EACEA/Eurydice/Eurostat, 2014). These guidelines usually describe learning content and list objectives and outcomes, sample learning activities and assessment methods framed under a child-centered pedagogical approach described in detail.

Curricular guidelines for older children in ECE settings are available in all of the participating countries, except Portugal, with

Greece, Romania and Turkey being the countries where separate official guidelines exist for younger and older preschooler groups. In general, emotional, social, language and communication, motor, mathematics, reading, artistic, life and health related skills are comprised the listed educational objectives and goals expected to be met during preschool education while second language training is covered only by the guidelines in Lithuania, Latvia, Portugal and Romania. Intercultural skills and cultural diversity seems to be a topic that is largely ignored.

Although the national guidelines only set the pedagogical framework giving teachers power to make such practical decisions as choosing the materials, planning educational activities and strategies, in some countries including Greece, Latvia, Portugal, and Romania daily schedule is fixed within the framework. Teachers are advised to keep the balance between adult-led and children-initiated activities as well as between group and individual activities that are both meaningful, built on children's previous experiences, and related to their real lives.

Teachers are expected to make assessment ongoing based on daily observations. Only in Turkey, teachers are required to keep written records of children's development and share it regularly with parents.

In fact, parent involvement is highly valued, but put in practice in varying degrees (European Commission/EACEA/Eurydice/Eurostat, 2014). Unlike the others, there is no place for parents of community members in school councils in Turkey. Whereas, Greek and Portuguese parents are entrusted with a significant role in decision-making processes while Lithuanian, Latvian, and Romanian parents are given a consultative role.

Success of any educational program depends on what teachers actually do in their classrooms (Clements, 2004). Therefore, the aim of this study was to explore how teachers of young children provide education in their classrooms in the countries participated in this project including Greece, Latvia, Lithuania, Portugal, Romania, and Turkey. More specifically, attention was paid to reveal to what degree developmentally appropriate practices were employed in pre-k to primary programs; to explore whether teachers from different countries vary on the level they implement DAP as well as to reveal teacher and classroom characteristics predicting teachers' practices. More specifically we intended to answer the following questions:

1. What kind of learning experiences pre-k to primary teachers value in their practices in different countries?
2. How do pre-k to primary teachers organize learning environments?
3. What are the teaching and learning strategies they use in their practices?

4. What kind of parent involvement do they value in their practice?
5. What are the processes of planning, recording and evaluation they use to assess children's learning.

Method

Participants. Early childhood and primary school teachers were invited to participate in the study. The sample was created through a convenient sampling. Demographic information about the participants was given in the tables 2 - 7. As it could be noticed in Table 2, teachers under the age of 40 dominated the Romanian and Turkish samples while in Lithuania and Portugal majority of the teachers were over 40 years old.

Table 2. Age of the participants

		20-30 years	31-40 years	41-50 years	51-60 years	>60 years
	n	%	%	%	%	%
Greece	36	16.7	36.1	44.4	2.8	-
Latvia	30	30.0	16.7	30.0	20.0	3.3
Lithuania	50	-	20.0	52.0	20.0	8.0
Portugal	50	4.0	24.0	38.0	34.0	-
Romania	71	53.5	22.5	18.3	5.6	-
Turkey	50	40,0	48,0	10,0	2,0	-

Table 3 shows the number of female and male teachers. Considering the fact that teaching young children is still seen as a woman's job it is no surprise that there were no male teachers in the Greek, Latvian, Lithuanian, or Turkish samples. Seven percent of Romanian sample, on the other hand, was comprised of male teachers.

Table 3. Gender of the participants

	Female		Male	
	n	%	n	%
Greece	36	100.0	-	-
Latvia	30	100.0	-	-
Lithuania	50	100.0	-	-
Portugal	49	98.0	1	2.0
Romania	66	93.0	5	7.0
Turkey	50	100.0	-	-

There is usually a split in place in many European countries in the system of education of young children. Regulations for who could teach children under age three is more relaxed than for the upper age groups. This reflects the composite of the participants' educational level in the countries Latvia, Turkey, and, to a lesser degree, in Lithuania. All of the teachers from Romania and Portugal had at least a bachelor's degree with a significant portion having master's degrees.

Table 4. Educational levels completed by the participants

	High School	Two- year college	Bachelors	Master	Doctorate
	%	%	%	%	%
Greece	2,9	2,9	50,0	35,3	8,8
Latvia	-	40,0	43,3	16,7	-
Lithuania	4,0	14,0	58,0	24,0	-
Portugal	-	-	76,0	24,0	-
Romania	-	-	54,9	45,1	-
Turkey	2,0	30,0	66,0	2,0	-

As Table 5 shows, majority of the participants were experienced teachers. But 44.3% of Romanian teachers were pretty new to the field with having only 1-3 years of experience while the Portugal teachers had the most experience.

Table 5. Years of experience the participants had.

	1-3 years	4-10 years	11-20 years	20-30 years	31-40 years	41-50 years
	%	%	%	%	%	%
Greece	11,1	36,1	38,9	13,9	-	-
Latvia	6,7	43,3	16,7	23,3	6,7	3,3
Lithuania	N/A	N/A	N/A	N/A	N/A	N/A
Portugal	4,0	10,	24,0	44,0	18,0	-
Romania	44,3	25,7	12,9	8,6	8,6	-
Turkey	12,0	46,0	30,0	12,0	-	-

In terms of the locations of the schools where our participants worked, majority of the teachers worked in the urban areas. All of the Latvian and Turkish teachers who participated in the study reported that they worked for an urban school. As far as public or private school difference, the Latvian and Lithuanian samples were comprised completely of teachers who worked for publicly funded schools.

Table 6. Location of the schools where the participants worked.

	Urban %	Rural %
Greece	65,7	34,3
Latvia	100,0	-
Lithuania	92,0	8,0
Portugal	74,0	26,0
Romania	71,6	28,4
Turkey	100,0	-

Table 7. Type of the schools where the participants were employed.

	Public %	Private %
Greece	91,7	8,3
Latvia	100,0	-
Lithuania	100,0	-
Portugal	58,0	42,0
Romania	75,7	24,3
Turkey	72,0	28,0

Survey Instrument. The Instructional Activities Scale (IAS). This scale was a part of The Teachers Beliefs and Practices Survey developed by Burts et al. (2000) following Developmentally Appropriate Practice (DAP) guidelines (Bredekamp & Copple, 1997) endorsed by NAEYC. The questionnaire is comprised of three dimensions including a teacher demographic questionnaire, Teacher Belief Scale, and Instructional Activities Scale. The demographics questionnaire contained questions about educational degrees participating teachers held, their years of experience, and their work conditions.

For this study we only used the Demographics and The Instructional Activities Scale. Comprised of 30 items, the IAS measures how often appropriate and inappropriate practices occur in classrooms. The IAS was designed with a five-point Likert type scale

ranging from 1 = Almost never (less than monthly), 2 = Rarely (monthly), 3 = Sometimes (weekly), 4 = Regularly (2-4 times a week), and 5 = Often (daily). For this research, the scale was expanded by addition of ten more questions that were developed based on NAEYC's recommendations for developmentally appropriate practices. Additional questions asked the participants how often children in their classrooms do the following activities:

- Use variety of media and technology
- Build on their informal learning experiences and knowledge
- Engage in activities that strengthen their problem-solving, inquiry skills and reasoning processes
- Have plenty of opportunities to communicate what they have learned
- Are encouraged to be creative
- Talk and exchange ideas with each other during activities
- Are taken to field trips
- Are given ample time to engage in what they explore and manipulate concepts/ideas with keen interest.
- Are provided many daily opportunities for developing their social skills (i.e., cooperating, helping, talking) with peers in the classroom.
- Are engaged in activities that are responsive to individual children's interests.
- Are provided plenty of materials to engage in and explore
- Are assessed for their development and learning using alternative assessment methods (portfolios, observations, anecdotes, record keeping etc.)

In addition, with an aim to explore whether such significant issues of ever globalizing world as immigration, environment, and human rights crises receive the attention they very much deserve in the agendas of the teachers of the new millenium. The participants were asked how often they addressed some of the 21th century topics and skills listed below in their classrooms.

- Sustainable development
- Environment
- Multiculturalism
- Intercultural skills
- Critical thinking
- Media literacy
- Language skills
- Human rights
- Care and empathy

Procedure. The research instrument was administered to preschool and primary school teachers. Participation to the study was voluntary. The participants were informed about the purpose of the study and asked to complete all of the items on the research instrument. The research instrument took about 20 minutes to complete.

Results

Descriptive analysis of data was conducted to reveal how often the participants offered developmentally appropriate and inappropriate practices. Additional analysis was run to see the frequency of inclusion of 21st Century topics and skills in their teaching.

Provision of developmentally appropriate practices

Descriptive analysis of the data showed that it is a, reportedly, common and regular practice for the teachers participated in the study to offer developmentally appropriate activities while in some important areas they failed to do so.

1. building with blocks

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	-	2,9	23,5	17,6	55,9
Latvia	-	-	-	20,0	80,0
Lithuania	17,0	8,5	8,5	25,5	40,4
Portugal	-	-	4,0	22,0	74,0
Romania	4,1	9,5	16,2	24,3	43,2
Turkey	2,0	4,1	12,2	22,4	59,2

2. selecting from a variety of learning areas and projects (i.e., dramatic play, construction, art, music science experience, etc.)

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	2,8	-	22,2	41,7	33,3
Latvia	-	3,3	10,0	53,3	33,3
Lithuania	6,1	10,2	30,6	44,9	8,2
Portugal	-	-	10,0	42,0	48,0
Romania	-	1,4	12,2	33,8	51,4
Turkey	4,0	4,0	20,0	26,0	46,0

5. having their work displayed in the classroom

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	-	8,3	19,4	30,6	41,7
Latvia	-	-	-	23,3	76,7
Lithuania	2	-	22,0	38,0	38,0
Portugal	2,1	-	2,1	8,3	87,5
Romania	-	1,4	12,2	20,3	64,9
Turkey	2,0	-	6,0	26,0	66,0

4. experimenting with writing by drawing, copying, and using their own invented spelling

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	-	2,9	17,1	37,1	42,9
Latvia	3,3	23,3	30,0	30,0	13,3
Lithuania	8,2	14,9	16,3	20,4	40,8
Portugal	2,0	2,0	6,0	24,0	66,0
Romania	1,4	1,4	20,3	33,8	40,5
Turkey	4,1	4,1	18,4	32,7	40,8

5. playing with games, puzzles, and construction materials (e.g., Thinker Toys, Bristle Blocks)

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	-	-	8,3	25,0	66,7
Latvia	-	-	-	3,3	96,7
Lithuania	10,0	14,0	10,0	32,0	34,0
Portugal	-	-	4,1	12,2	83,7
Romania	1,4	5,4	12,2	20,3	58,1
Turkey	2,0	-	2,0	16,3	79,6

6. exploring science materials (e.g., animals, plants, wheels, gears, etc.)

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	2,8	16,7	44,4	25,0	11,1
Latvia	-	3,3	33,3	26,7	36,7

Lithuania	4,0	16,0	36,0	34,0	10,0
Portugal	2,0	18,0	40,0	22,0	18,0
Romania	-	6,8	24,3	45,9	20,3
Turkey	2,0	10,0	30,0	22,0	36,0

Participants' responses to the question that asked how often they allowed children in their classrooms explore science materials revealed that 64% of Greek teachers, 36.6% of Latvian teachers, 56% of Lithuanian teachers, 60% of Portuguese, 31% of Romanian, and 44% of Turkish teachers did not provide regular science explorations in their practice.

7. singing, listening, and/or moving to music

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	-	-	8,3	55,6	36,1
Latvia	-	-	3,3	30,0	66,7
Lithuania	-	2,0	4,0	6,0	34,0
Portugal	-	-	8,3	25,0	66,7
Romania	-	-	9,5	29,7	58,1
Turkey	2,0	-	2,0	34,0	62,0

8. doing planned movement activities using large muscles (e.g., balancing, running, jumping)

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	3,0	15,2	30,3	30,3	21,2
Latvia	-	-	-	33,3	66,7
Lithuania	2,0	2,0	10,0	46,0	40,0
Portugal	-	-	38,0	36,0	26,0
Romania	-	5,4	13,5	48,6	29,7
Turkey	2,0	-	16,0	28,0	54,0

It is important for young children to engage in gross motor activities for their health. In fact, it is recommended to provide young children for at least one hour of free play time during which they can actively use their large muscles as well as an hour of structured motor play, both of which would cultivate children's physical stamina and strength. Unfortunately, participants' responses to the question about activities that support motor skills revealed that 64% of Greek teachers, 36.6% of Latvian teachers, 56% of Lithuanian teachers, 60% of Portuguese,

31% of Romanian, and 44% of Turkish teachers did not provide structured gross-motor activities regularly in their practice.

9. using manipulative (e.g., pegboards, Legos, and Unifix Cubes)

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	2,9	11,4	34,3	11,4	40,0
Latvia	-	-	6,7	40,0	53,3
Lithuania	26,5	4,1	28,6	18,4	22,4
Portugal	2,0	6,1	14,3	22,4	55,1
Romania	5,4	6,8	16,2	36,5	32,4
Turkey	-	4,0	16,0	26,0	54,0

A significant percentage of the Greek and Lithuanian teachers reported that use of manipulatives was not a regular activity in their classrooms. In fact, unlike 93.3% of their Latvian colleagues, 48.6% of Greek, 59.2% of Lithuanian, 22.4% of Portuguese, 28.4% of Romanian, and 20% of Turkish participants failed to give children regular opportunities to play with manipulatives.

19. having the opportunity to learn about people with special needs (e.g., a speaker or a character in a book)

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	5,6	38,9	33,3	19,4	2,8
Latvia	16,7	46,7	20,0	13,3	3,3
Lithuania	29,2	35,4	14,6	14,6	6,2
Portugal	16,3	28,6	26,5	10,2	18,4
Romania	5,4	23,0	29,7	24,3	14,9
Turkey	12,0	20,0	24,0	18,0	26,0

Participants' responses to the question about the frequency of opportunities they provided in their classrooms to learn about people with special needs revealed that this was something largely ignored in 44.5% of Greek teachers, 63.4% of Latvian teachers, 64.6% of Lithuanian teachers, 44.9% of Portuguese teachers, 28.4% of Romanian teachers, and 32% of Turkish teachers' practice.

21. seeing their own race, culture, language reflected in the classroom

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
--	----------------------	-------------	----------------	----------------	------------

	%	%	%	%	%
Greece	5,6	19,4	27,8	13,9	33,3
Latvia	3,3	16,7	20,0	20,0	40,0
Lithuania	18,0	4,0	28,0	26,0	24,0
Portugal	8,3	12,5	31,3	14,6	33,3
Romania	5,4	14,9	20,3	36,5	20,3
Turkey	6,1	6,1	16,3	42,9	28,6

23. experiencing parents reading stories or sharing a skill or hobby with the class

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	20,0	28,6	34,3	14,3	2,9
Latvia	23,3	46,7	16,7	3,3	10,0
Lithuania	18,4	30,6	22,4	22,4	6,1
Portugal	16,3	20,4	22,4	14,3	26,5
Romania	21,6	31,1	31,1	12,2	1,4
Turkey	14,0	20,0	26,0	24,0	16,0

Participants' responses to the question about parent involvement that showed that parent involvement activities were something rare to occur in 48.6% of Greek teachers', 70% of Latvian teachers', 49% of Lithuanian teachers', 36.7% of Portuguese teachers', 52.7% of Romanian teachers', and 34% of Turkish teachers' classrooms.

24. engaging in child-chosen, teacher-supported play activities

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	-	2,8	27,8	44,4	25,0
Latvia	-	3,3	6,7	26,7	63,3
Lithuania	-	6,0	24,0	44,0	26,0
Portugal	-	6,0	22,0	22,0	50,0
Romania	-	8,1	6,8	32,4	50,0
Turkey	2,0	4,0	18,0	26,0	50,0

Majority of the participants (69.4% of the Greek teachers, 90% of the Latvian teachers, 70% of the Lithuanian teachers, 72% of Portuguese, 82.4% of Romanian, and 76% of Turkish teachers) provided regular opportunities for children in their classrooms to engage in self-chosen activities during which teachers take the role of a facilitator.

25. drawing, painting, working with clay, and using other art media

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	5,6	--	16,7	44,4	33,3
Latvia	-	-	6,7	46,7	46,7
Lithuania	2,0	10,0	8,0	44,0	36,0
Portugal	2,0	-	6,1	28,6	63,3
Romania	4,1	4,1	25,7	41,9	21,6
Turkey	2,0	2,0	10,0	30,0	56,0

Participants' responses to the question that asked how often they allowed children to use materials revealed that 77.7% of Greek teachers, 93.4% of Latvian teachers, 80% of Lithuanian teachers, 92% of Portuguese teachers, 63% of Romanian teachers, and 86% of Turkish teachers regularly provided art activities in their classrooms while it was a rare practice for 12% of Lithuanian teachers.

26. solving real math problems using real objects in the classroom environment that are incorporated into other subject areas

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	2,8	8,3	36,1	36,1	16,7
Latvia	3,3	3,3	13,3	43,3	36,7
Lithuania	10,0	6,0	28,0	36,0	20,0
Portugal	2,0	2,0	12,0	46,0	38,0
Romania	-	4,1	28,4	40,5	24,3
Turkey	6,1	6,1	22,4	36,7	28,6

Participants' responses to the question that asked how often children in their classrooms had the opportunity to solve real math problems using real objects in their classrooms environment that are incorporated into other subject areas revealed that this was a regular practice in 53% of Greek teachers, 80% of Latvian teachers, 56% of Lithuanian teachers, 84% of Portuguese, 65% of Romanian, and 65% of Turkish teachers.

28. engaging in experiences that demonstrate the explicit valuing of each other (e.g., sending a card to a sick classmate)

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	17,1	22,9	37,1	20,0	2,9
Latvia	-	13,3	36,7	16,7	33,3
Lithuania	12,0	30,0	38,0	14,0	6,0
Portugal	28,0	18,0	22,0	20,0	12,0
Romania	-	8,1	31,1	36,5	21,6
Turkey	8,2	16,3	28,6	22,4	24,5

Participants' responses to the question that asked how often children in their classrooms had the opportunity to engage in experiences that demonstrate the explicit valuing of each other (e.g., sending a card to a sick classmate) revealed that 40% of Greek teachers, 42% of Lithuanian teachers, 46% of Portuguese teachers, 20.5% of Turkish teachers never or rarely provided such activities in their practices while only 13.3% of Latvian teachers and 8% of Romanian teachers made such report.

29. working with materials that have been adapted or modified to meet their needs

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	2,9	14,3	17,1	34,3	31,4
Latvia	-	-	13,3	30,0	56,7
Lithuania	2,1	10,4	14,6	37,5	35,4
Portugal	14,3	10,2	24,5	28,6	22,4
Romania	-	-	20,3	37,8	39,2
Turkey	16,7	8,3	27,1	22,9	25,0

Participants' responses to the question that asked how often children in their classrooms had the opportunity to work with materials that have been adapted or modified to meet their needs revealed that this was a regular practice in 65% of Greek teachers', 87% of Latvian teachers', 73% of Lithuanian teachers', 51% of Portuguese teachers', 77% of Romanian teachers', and 47% of Turkish teachers' classrooms. But, 24% of Portuguese and 24% of Turkish teachers made no adaptations in materials.

30. doing activities that integrate multiple subjects (reading, math, science, social studies, etc.)

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	-	2,8	22,2	33,3	41,7
Latvia	-	3,3	6,7	20,0	70,0
Lithuania	4,0	6,0	26,0	40,0	24,0
Portugal	-	-	10,4	27,1	62,5
Romania	1,4	-	9,5	35,1	51,4
Turkey	2,0	4,0	16,0	26,0	52,0

Participants' responses to the question that asked how often children in their classrooms had the opportunity to do activities that integrate multiple subjects (reading, math, science, social studies, etc.) revealed that provision of integrated activities was a common practice.

31. using variety of media and technology

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	5,6	13,9	33,3	19,4	27,8
Latvia	10,0	33,3	36,7	20,0	-
Lithuania	8,0	10,0	24,0	48,0	10,0
Portugal	8,2	8,2	24,5	36,7	22,4
Romania	2,7	13,5	32,4	29,7	18,9
Turkey	12,0	6,0	22,0	34,0	26,0

Participants' responses to the question that asked how often children in their classrooms had the opportunity to use variety of media and technology revealed that 48% of Greek teachers, 58% of Lithuanian teachers, 59% of Portuguese, 49% of Romanian, 60% of Turkish teachers, and only 20% of Latvian teachers allowed children to use media technologies regularly in the classroom.

32. building on their informal learning experiences and knowledge

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%

Greece	-	2,8	19,4	33,3	44,4
Latvia	-	-	10,0	16,7	73,3
Lithuania	-	8,0	32,0	46,0	14,0
Portugal	-	-	16,0	40,0	44,0
Romania	4,1	12,2	24,3	41,9	14,9
Turkey	6,4	10,6	23,4	34,0	25,5

Majority of the participants (90% of Latvian teachers, 84% of Portuguese, 78% of Greek teachers, 60% of Lithuanian teachers, 57% of Romanian, and 61% of Turkish teachers) reported that children in their classrooms had regular opportunities to build on their informal learning experiences and previous knowledge.

33. engaging in activities that strengthen their problem-solving, inquiry skills and reasoning processes

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	2,9	-	35,3	26,5	35,3
Latvia	-	-	13,3	43,3	43,3
Lithuania	-	2,0	34,0	42,0	22,0
Portugal	-	2,0	10,2	36,7	51,0
Romania	-	8,1	16,2	50,0	23,0
Turkey	4,0	4,0	10,0	52,0	30,0

Participants' responses to the question that asked how often children in their classrooms had the opportunity to engage in activities that strengthen their problem-solving, inquiry skills and reasoning processes revealed that 88% of Portuguese, 87% of Latvian teachers, 82% of Turkish teachers, 73% of Romanian teachers, 64% of Lithuanian teachers, and 62% of Greek teachers provided such activities regularly in their practice.

34. having plenty of opportunities to communicate what they have learned

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	2,8	2,8	19,4	36,1	38,9
Latvia	-	-	3,3	26,7	70,0
Lithuania	-	4,0	22,0	44,0	30,0
Portugal	2,0	2,0	2,0	24,0	70,0
Romania	1,4	6,8	10,8	39,2	39,2
Turkey	2,0	-	6,0	28,0	64,0

Participants' responses to the question that asked how often children in their classrooms had the opportunity to have plenty of opportunities to communicate what they have learned revealed that this was the case in majority of the participants' classrooms (97% of Latvian teachers, 94% of Portuguese, 93% of Turkish teachers, 78% of Romanian, 75% of Greek teachers, and 74% of Lithuanian teachers).

35. being encouraged to be creative

	1	2	3	4	5
	Almost never	Rarely	Sometimes	Regularly	Often
	%	%	%	%	%
Greece	2,8	2,8	2,8	13,9	77,8
Latvia	-	-	-	16,7	83,3
Lithuania	-	2,0	6,0	42,0	50,0
Portugal	-	-	8,2	18,4	73,5
Romania	-	1,4	1,4	14,9	79,7
Turkey	2,0	-	2,0	32,0	64,0

Creativity was also appreciated and supported by the participants in general. 92% of Greek teachers, 100% of Latvian teachers, 92% of Lithuanian teachers, 92% of Portuguese, 95% of Romanian, and 96% of Turkish teachers regularly encouraged children in their classrooms to be creative.

36. talking and exchanging ideas with each other during activities

	1	2	3	4	5
	Almost never	Rarely	Sometimes	Regularly	Often
	%	%	%	%	%
Greece	-	5,6	8,3	25,0	61,1
Latvia	-	-	6,7	13,3	80,0
Lithuania	-	2,0	8,0	38,0	52,0
Portugal	-	4,1	10,2	24,5	61,2
Romania	-	-	5,4	20,3	71,6
Turkey	2,4	-	2,4	23,8	71,4

Participants in general reported that children in their classrooms were given plenty of opportunities to talk and exchange ideas with each other during activities. 86% of Greek teachers, 93% of Latvian teachers, 90% of Lithuanian teachers, 86% of Portuguese, 92% of

Romanian, and 95% of Turkish teachers allowed dialogue among children during activities.

37. being taken to field trips

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	14,7	47,1	29,4	8,8	-
Latvia	-	40,0	50,0	6,7	3,3
Lithuania	8,0	40,0	26,0	16,0	10,0
Portugal	4,2	29,2	31,3	22,9	12,5
Romania	12,2	36,5	29,7	13,5	5,4
Turkey	6,3	16,7	29,2	20,8	27,1

Participants' responses to the question about the frequency of field trips showed that for a significant portion of teachers field trips were not something they regularly kept in their agendas. In fact, 62% of Greek teachers, 40% of Latvian teachers, 48% of Lithuanian teachers, 33% of Portuguese, 49% of Romanian, and 23% of Turkish teachers reported that they never or rarely organized field trips.

38. given ample time to engage in what they explore and manipulate concepts/ideas with keen interest.

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	2,9	11,4	37,1	25,7	22,9
Latvia	-	3,3	33,3	30,0	33,3
Lithuania	0,0	16,0	32,0	36,0	16,0
Portugal	2,0	6,0	28,0	44,0	20,0
Romania	-	2,7	10,8	44,6	39,2
Turkey	2,2	4,3	19,6	32,6	41,3

Participants in general reported that children in their classroom were given plenty of time and opportunities, and materials to follow their interests, continue with their explorations, and develop their social skills.

39. being provided many daily opportunities for developing their social skills (i.e., cooperating, helping, talking) with peers in the classroom.

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	-	2,8	5,6	33,3	58,3

Latvia	-	-	-	20,0	80,0
Lithuania	-	-	8,0	20,0	72,0
Portugal	2,0	2,0	4,1	26,5	65,3
Romania	-	1,4	8,1	23,0	64,9
Turkey	2,0	-	6,0	18,0	74,0

40. engaged in activities that are responsive to individual children's interests.

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	-	16,7	27,8	30,6	25,0
Latvia	-	-	6,7	26,7	66,7
Lithuania	-	-	8,0	42,0	50,0
Portugal	2,0	-	8,0	22,0	68,0
Romania	-	-	4,1	29,7	63,5
Turkey	2,0	2,0	12,0	40,0	44,0

41. being provided plenty of materials to engage in and explore

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	5,6	11,1	30,6	13,9	38,9
Latvia	-	3,3	10,0	33,3	53,3
Lithuania	-	4,0	20,0	54,0	22,0
Portugal	-	6,3	10,4	29,2	54,2
Romania	1,4	4,1	14,9	37,8	39,2
Turkey	2,0	-	18,0	32,0	48,0

42. being assessed for their development and learning using alternative assessment methods (portfolios, observations, anecdotes, record keeping etc.)

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	5,6	27,8	27,8	13,9	25,0
Latvia	3,3	30,0	23,3	16,7	26,7
Lithuania	-	6,0	10,0	24,0	60,0
Portugal	2,0	6,0	4,0	36,0	52,0
Romania	-	1,4	12,2	31,1	52,7
Turkey	2,0	8,0	8,0	34,0	48,0

Responses to the question about how often children in their classrooms are assessed for their development and learning through the use of alternative assessment methods (portfolios, observations, anecdotes, record keeping etc.) revealed that 33% of Greek teachers

and 33% of Latvian teachers never or rarely used alternative assessment methods while for a high percentage of the teachers from other countries it was a regular practice (88% of Portuguese, 84% of Lithuanian teachers, 84% of Romanian, and 82% of Turkish teachers).

Provision of developmentally inappropriate practices

Analysis of the data also showed that a very large group of teachers also delivered inappropriate activities. There were a significant number of teachers who relied on commercially prepared phonics books. Use of worksheets and flashcards, cut and paste activities, teacher directed whole-class activities, and ability grouping were common practices among the participants. Fortunately, inappropriate disciplinary strategies including separation of children from their friends or putting them in time-out in order to maintain classroom order seemed not to be practiced by the majority of the teachers.

Of Greek teachers, 40% regularly used commercially prepared phonics books; 43% regularly practiced ability groupings; 43% frequently used worksheets and 37% used flashcards, 6.7% regularly engaged children in rote counting, 23% in handwriting, and 45% in cut and paste activities; 77% regularly had teacher directed whole-class activities; 19% made children sit quietly for a long period of time; 11% used time-out and 16% practiced removing children from the group for disciplinary purposes.

Of Latvian teachers, 50% regularly used commercially prepared phonics books; 90% regularly practiced ability groupings; 43% frequently used worksheets and 83% used flashcards, 65% regularly engaged children in rote counting, 50% in handwriting, and 57% in cut and paste activities; 63% regularly had teacher directed whole-class activities; 3% made children sit quietly for a long period of time; 10% used time-out and 7% practiced removing children from the group for disciplinary purposes.

Of Lithuanian teachers, 47% regularly used commercially prepared phonics books; 74% regularly practiced ability groupings; 75% frequently used worksheets and 74% used flashcards, 83% regularly engaged children in rote counting, 68% in handwriting, and 64% in cut and paste activities; 87% regularly had teacher directed whole-class activities; 35% made children sit quietly for a long period of time; zero used time-out and 8% practiced removing children from the group for disciplinary purposes.

Of Portuguese teachers, 40% regularly used commercially prepared phonics books; 49% regularly practiced ability groupings; 30% frequently used worksheets and 48% used flashcards, 64% regularly engaged children in rote counting, 49% in handwriting, and 41% in cut and paste activities; 88% regularly had teacher directed whole-class activities; 22% made children sit quietly for a long period

of time; 8% used time-out and 13% practiced removing children from the group for disciplinary purposes.

Of Romanian teachers, 20% regularly used commercially prepared phonics books; 84% regularly practiced ability groupings; 88% frequently used worksheets and 76% used flashcards, 72% regularly engaged children in rote counting, 49% in handwriting, and 78% in cut and paste activities; 97% regularly had teacher directed whole-class activities; 39% made children sit quietly for a long period of time; 8% used time-out and 19% practiced removing children from the group for disciplinary purposes.

Of Turkish teachers, 36% regularly used commercially prepared phonics books; 62% regularly practiced ability groupings; 79% frequently used worksheets and 72% used flashcards, 46% regularly engaged children in rote counting, 77% in handwriting, and 82% in cut and paste activities; 85% regularly had teacher directed whole-class activities; 29% made children sit quietly for a long period of time; 12% used time-out and 19% practiced removing children from the group for disciplinary purposes.

10. using commercially-prepared phonics activities

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	13,9	19,4	30,6	22,2	13,9
Latvia	3,3	10,0	36,7	40,0	10,0
Lithuania	18,4	12,2	26,5	26,5	16,3
Portugal	6,3	14,6	39,6	29,2	10,4
Romania	8,1	16,2	48,6	17,6	6,8
Turkey	14,9	8,5	38,3	19,1	19,1

11. working in assigned ability-level groups

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	5,7	5,7	45,7	28,6	14,3
Latvia	-	-	10,0	26,7	63,3
Lithuania	2,0	14,0	10,0	56,0	18,0
Portugal	14,3	6,1	30,6	34,7	14,3
Romania	-	1,4	12,2	50,0	33,8
Turkey	10,0	8,0	20,0	18,0	44,0

12. circling, underlining, and/or marking items on worksheets

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
--	----------------------	-------------	----------------	----------------	------------

	%	%	%	%	%
Greece	5,7	11,4	40,0	34,3	8,6
Latvia	3,3	-	13,3	46,7	36,7
Lithuania	4,1	4,1	16,3	36,7	38,8
Portugal	22,0	18,0	28,0	22,0	10,0
Romania	-	4,1	5,4	33,8	54,1
Turkey	-	-	20,4	36,7	42,9

13. using flashcards with ABCs, sight words, and/or math facts

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	2,9	25,7	34,3	22,9	14,3
Latvia	-	-	16,7	33,3	50,0
Lithuania	4,0	4,0	18,0	48,0	26,0
Portugal	6,0	14,0	32,0	34,0	14,0
Romania	2,7	4,1	14,9	40,5	35,1
Turkey	4,0	2,0	22,0	38,0	34,0

14. participating in rote counting

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	2,9	8,8	23,5	35,3	29,4
Latvia	56,7	23,3	13,3	6,7	-
Lithuania	2,0	8,2	10,2	36,6	46,9
Portugal	-	8,0	28,0	28,0	36,0
Romania	1,4	4,1	20,3	47,3	24,3
Turkey	10,4	18,8	22,9	25,0	22,9

15. practicing handwriting on lines

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	13,9	16,7	41,7	22,2	5,6
Latvia	30,0	6,7	13,3	36,7	13,3
Lithuania	12,0	8,0	12,0	30,0	38,0
Portugal	20,4	14,3	16,3	36,7	12,2
Romania	9,5	8,1	16,2	29,7	33,8
Turkey	4,1	6,1	12,2	42,9	34,7

16. coloring, cutting, and pasting pre-drawn forms

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%

Greece	11,1	19,4	22,2	25,0	22,2
Latvia	6,7	20,0	16,7	46,7	10,0
Lithuania	2,0	8,0	26,0	36,0	28,0
Portugal	14,3	18,4	26,5	22,4	18,4
Romania	2,7	1,4	14,9	37,8	40,5
Turkey	-	4,0	14,0	36,0	46,0

17. participating in whole-class, teacher-directed instruction

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	5,9	2,9	14,7	29,4	47,1
Latvia	-	3,3	33,3	43,3	20,0
Lithuania	0,0	2,0	10,2	44,9	42,9
Portugal	-	6,1	6,1	16,3	71,4
Romania	-	-	-	17,6	79,7
Turkey	2,0	2,0	10,2	44,9	40,8

18. sitting and listening for long periods of time until they become restless and fidgety

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	41,7	19,4	19,4	11,1	8,3
Latvia	36,7	30,0	30,0	3,3	-
Lithuania	19,6	19,6	26,1	17,4	17,4
Portugal	30,0	20,0	28,0	12,0	10,0
Romania	8,1	24,3	25,7	21,6	17,6
Turkey	25,0	22,9	22,9	16,7	12,5

20. receiving rewards as incentives to participate in classroom activities in which they are reluctant participants

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	5,6	38,9	33,3	19,4	2,8
Latvia	3,3	23,3	43,3	23,3	6,7
Lithuania	13,6	29,6	27,3	20,4	9,1
Portugal	43,8	20,8	16,7	12,5	6,3
Romania	21,6	16,2	27,0	14,9	17,6
Turkey	8,0	6,0	28,0	26,0	32,0

22. getting placed in time-out (i.e., isolation, sitting on a chair, in a corner, or being sent outside of the room)

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	37,1	34,3	17,1	5,7	5,7
Latvia	50,0	23,3	16,7	3,3	6,7
Lithuania	76,0	12,0	12,0	0,0	0,0
Portugal	64,6	18,8	8,3	6,3	2,1
Romania	68,9	12,2	8,1	5,4	2,7
Turkey	46,0	20,0	22,0	6,0	6,0

27. getting separated from their friends to maintain classroom order

	1 Almost never	2 Rarely	3 Sometimes	4 Regularly	5 Often
	%	%	%	%	%
Greece	13,9	33,3	36,1	2,8	13,9
Latvia	56,7	16,7	20,0	6,7	-
Lithuania	64,0	12,0	16,0	6,0	2,0
Portugal	58,3	12,5	16,7	6,3	6,3
Romania	37,8	25,7	14,9	8,1	10,8
Turkey	33,3	25,0	22,9	8,3	10,4

Teaching 21th Century skills

As far as promotion of 21th Century skills, it appears that, overall, teaching about sustainable development, environmental issues, critical thinking, language skills, human rights, care & empathy have become a widespread practice while providing regular experiences to teach children about multiculturalism, intercultural skills, and media literacy was largely ignored.

Responses to the questions about how often the participants taught about critical 21th Century skills revealed that 37% Greek teachers regularly taught about sustainable development; 55% regularly provided environmental education; 31% regularly taught about multiculturalism; 44% regularly incorporated activities to support intercultural skills, 89% regularly incorporated activities to support critical thinking, 41% regularly supported children to gain media literacy , and 83% regularly provided activities supporting language skills; 53% regularly taught about human rights; 94% regularly helped children develop care and empathy for others.

Of Latvian teachers, 57% regularly taught about sustainable development; 70% regularly provided environmental education; 37% regularly taught about multiculturalism; 17% regularly incorporated activities to support intercultural skills, 83% regularly incorporated activities to support critical thinking, 37% regularly supported children to gain media literacy , and 83% regularly provided activities

supporting language skills; 67% regularly taught about human rights; 93% regularly helped children develop care and empathy for others.

Of Lithuanian teachers, 57% regularly taught about sustainable development; 84% regularly provided environmental education; 28% regularly taught about multiculturalism; 30% regularly incorporated activities to support intercultural skills, 70% regularly incorporated activities to support critical thinking, 56% regularly supported children to gain media literacy, and 98% regularly provided activities supporting language skills; 64% regularly taught about human rights; 86% regularly helped children develop care and empathy for others.

Of Portuguese teachers, 67% regularly taught about sustainable development; 80% regularly provided environmental education; 63% regularly taught about multiculturalism; 66% regularly incorporated activities to support intercultural skills, 94% regularly incorporated activities to support critical thinking, 74% regularly supported children to gain media literacy , and 92% regularly provided activities supporting language skills; 68% regularly taught about human rights; 97% regularly helped children develop care and empathy for others.

Of Romanian teachers, 75% regularly taught about sustainable development; 85% regularly provided environmental education; 37% regularly taught about multiculturalism; 43% regularly incorporated activities to support intercultural skills, 85% regularly incorporated activities to support critical thinking, 59% regularly supported children to gain media literacy , and 91% regularly provided activities supporting language skills; 76% regularly taught about human rights; and 93% regularly helped children develop care and empathy for others.

Of Turkish teachers, 56% regularly taught about sustainable development; 98% regularly provided environmental education; 42% regularly taught about multiculturalism; 51% regularly incorporated activities to support intercultural skills, 77% regularly incorporated activities to support critical thinking, 49% regularly supported children to gain media literacy, and 100% regularly provided activities supporting language skills; 96% regularly taught about human rights; 100% regularly helped children develop care and empathy for others.

Sustainable Development

	1 Almost never %	2 Rarely %	3 Sometimes %	4 Regularly %	5 Often %
Greece	14,3	17,1	31,4	22,9	14,3
Latvia	-	6,7	36,7	30,0	26,7
Lithuania	4,1	6,1	18,4	38,8	32,6
Portugal	-	6,1	26,5	36,7	30,6

Romania	-	4,1	18,9	41,9	33,8
Turkey	9,3	18,6	16,3	23,3	32,6

Participants' responses to the question that asked how often children in their classrooms had the opportunity to learn about sustainable development revealed that 37% of Greek teachers, 57% of Latvian teachers, 57% of Lithuanian teachers, 67% of Portuguese, 75% of Romanian, and 56% of Turkish regularly the topic in their teaching.

Environmental issues

	1 Almost never %	2 Rarely %	3 Sometimes %	4 Regularly %	5 Often %
Greece	-	5,6	38,9	38,9	16,7
Latvia	-	3,3	26,7	20,0	50,0
Lithuania	0,0	6,0	10,0	38,0	46,0
Portugal	-	2,0	18,0	28,0	52,0
Romania	-	1,4	12,2	41,9	43,2
Turkey	-	-	2,0	38,8	59,2

Participants' responses to the question that asked how often they provided environmental education revealed that 55% of Greek teachers, 70% of Latvian teachers, 84% of Lithuanian teachers, 80% of Portuguese, 85% of Romanian, and 98% of Turkish regularly addressed the topic in their teaching.

Multiculturalism

	1 Almost never %	2 Rarely %	3 Sometimes %	4 Regularly %	5 Often %
Greece	2,8	13,9	52,8	22,2	8,3
Latvia	3,3	30,0	30,0	23,3	13,3
Lithuania	10,0	32,0	30,0	24,0	4,0
Portugal	2,1	8,3	27,1	31,3	31,3
Romania	5,4	17,6	39,2	23,0	13,5
Turkey	4,0	22,0	22,0	22,0	20,0

Participants' responses to the question that asked how often they provided multicultural education revealed that 31% of Greek teachers, 37% of Latvian teachers, 28% of Lithuanian teachers, 63% of Portuguese, 37% of Romanian, and 42% of Turkish regularly addressed the topic in their teaching.

Intercultural skills

1	2	3	4	5
---	---	---	---	---

	Almost never %	Rarely %	Sometimes %	Regularly %	Often %
Greece	5,6	22,2	27,8	33,3	11,1
Latvia	3,3	40,0	40,0	10,0	6,7
Lithuania	8,0	32,0	30,0	24,0	6,0
Portugal	2,0	2,0	30,0	42,0	24,0
Romania	2,7	12,2	40,5	32,4	10,8
Turkey	6,4	25,5	17,0	29,8	21,3

Participants' responses to the question about how often they taught intercultural skills revealed that 44% of Greek teachers, 17% of Latvian teachers, 30% of Lithuanian teachers, 66% of Portuguese, 43% of Romanian, and 51% of Turkish regularly provided intercultural skills training.

Critical thinking

	1 Almost never %	2 Rarely %	3 Sometimes %	4 Regularly %	5 Often %
Greece	-	2,8	8,3	25,0	63,9
Latvia	-	-	16,7	53,3	30,0
Lithuania	2,0	8,0	20,0	38,0	32,0
Portugal	-	2,1	4,2	31,3	62,5
Romania	-	5,4	8,1	50,0	35,1
Turkey	-	4,3	19,1	34,0	42,6

Participants' responses to the question that asked how often they taught critical thinking skills revealed that 89% of Greek teachers, 83% of Latvian teachers, 70% of Lithuanian teachers, 94% of Portuguese, 85% of Romanian, and 77% of Turkish regularly provided opportunities for the children to improve their critical thinking skills.

Media literacy

	1 Almost never %	2 Rarely %	3 Sometimes %	4 Regularly %	5 Often %
Greece	5,6	11,1	41,7	27,8	13,9
Latvia	-	30,0	33,3	23,3	13,3
Lithuania	2,0	6,0	36,0	32,0	24,0
Portugal	2,0	2,0	22,0	34,0	40,0
Romania	4,1	9,5	25,7	43,2	16,2
Turkey	4,3	10,6	36,2	25,5	23,4

Participants' responses to the question that asked how often they provided education on media literacy revealed that 41% of Greek teachers, 37% of Latvian teachers, 56% of Lithuanian teachers, 74% of Portuguese, 59% of Romanian, and 49% of Turkish regularly addressed the topic in their teaching.

Language skills

	1 Almost never %	2 Rarely %	3 Sometimes %	4 Regularly %	5 Often %
Greece	-	2,8	13,9	16,7	66,7
Latvia	3,3	6,7	6,7	33,3	50,0
Lithuania	0,0	2,0	0,0	24,0	74,0
Portugal	-	2,0	6,1	34,7	57,1
Romania	-	1,4	5,4	28,4	63,5
Turkey	-	-	-	26,0	74,0

Participants' responses to the question that asked how often they provided activities to support language skills revealed that 83% of Greek teachers, 83% of Latvian teachers, 98% of Lithuanian teachers, 92% of Portuguese, 91% of Romanian, and 100% of Turkish regularly provided opportunities for the children to improve their language skills.

Human rights

	1 Almost never %	2 Rarely %	3 Sometimes %	4 Regularly %	5 Often %
Greece	2,8	11,1	33,3	22,2	30,6
Latvia	-	10,0	23,3	46,7	20,0
Lithuania	0,0	10,0	26,0	36,0	28,0
Portugal	4,0	2,0	16,0	20,0	58,0
Romania	2,7	6,8	13,5	36,5	39,2
Turkey	-	-	4,0	32,0	64,0

Participants' responses to the question that asked how often they taught about human rights showed that 64% of Greek teachers, 67% of Latvian teachers, 64% of Lithuanian teachers, 68% of Portuguese, 76% of Romanian, and 96% of Turkish regularly included the topic in their teaching.

Care & empathy

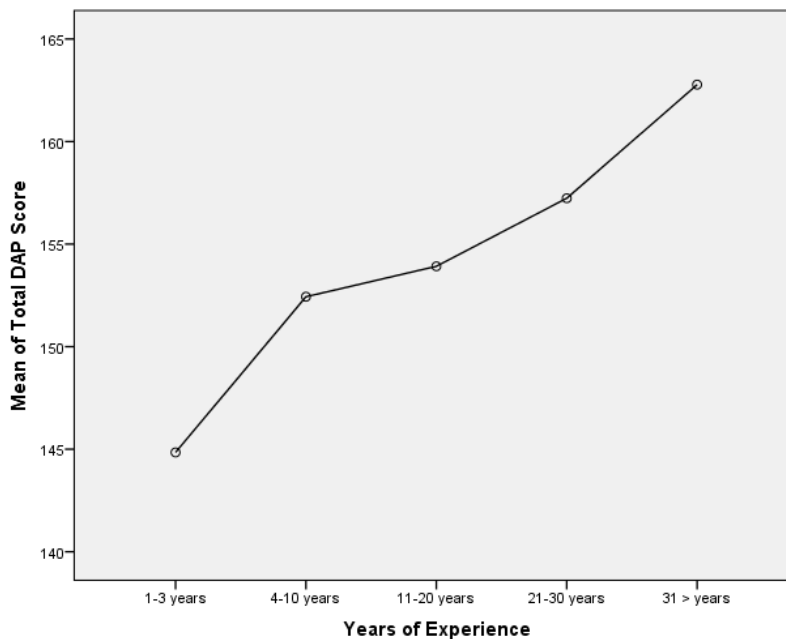
	1 Almost never %	2 Rarely %	3 Sometimes %	4 Regularly %	5 Often %
Greece	-	-	5,6	27,8	66,7

Latvia	-	-	6,7	10,0	83,3
Lithuania	-	4,0	10,0	18,0	68,0
Portugal	-	-	2,0	8,2	89,2
Romania	-	1,4	4,1	10,8	82,4
Turkey	-	-	-	14,0	86,0

Participants' responses to the question that asked how often they engaged in effort to cultivate care and empathy in children showed that 94% of Greek teachers, 93% of Latvian teachers, 86% of Lithuanian teachers, 97% of Portuguese, 93% of Romanian, and 100% of Turkish regularly addressed the topic in their classrooms.

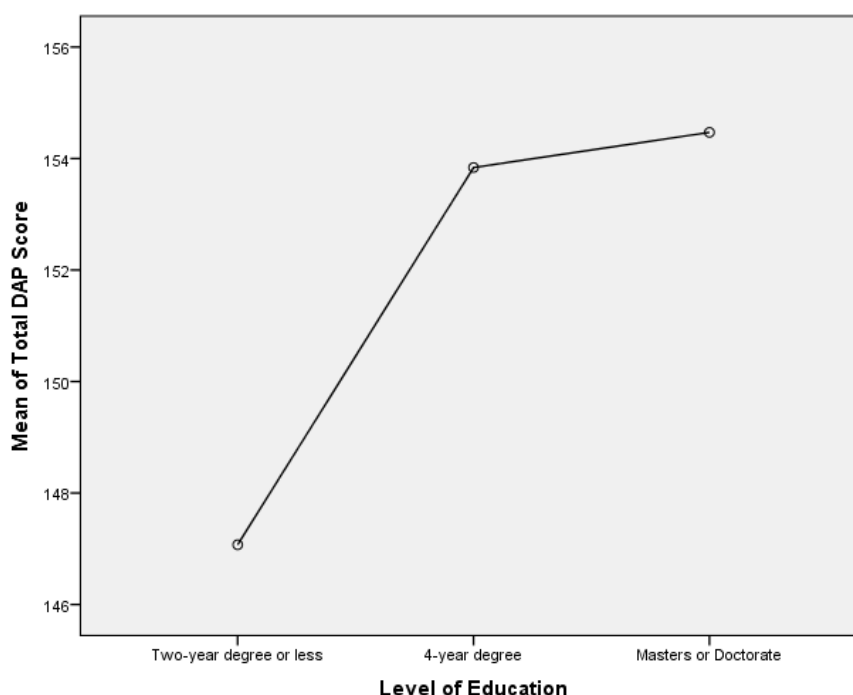
Comparisons of Classroom Activities Scores

Teachers' years of experience. Two-way ANOVA was conducted to examine whether there were significant differences in the total classroom activities scores and teachers' years of experience. A significant difference was found between practices scores of teachers with more experienced groups and those with less experiences ($F(4,235)=7.183$, $p=.000$). Results showed that teachers with over 30 years of experience ($M=162.8$, $SD=13.7$) had significantly higher scores than those with less experience including novice teachers ($M=144.85$, $SD=16.7$), those with 4-10 years of experience ($M=152.44$, $SD=13.8$), those with 11-20 years ($M=153.92$, $SD=12.3$), 21-30 years ($M=157.23$, $SD=13.7$). Teachers with 21-30 years of experience also had significantly higher scores than novice teachers.



Level of education. Two-way ANOVA was conducted to examine whether there were significant differences in the total classroom

activities scores and teachers' level of education. A significant difference was found between practices scores of teachers with a two-year-degree or less and those with a bachelor's degree and master's and doctorate ($F(2,234)=3.04, p=.05$). Results showed that teachers with a bachelor's degree ($M=153.84, SD=13.4$) and master's or doctorate ($M=154.47, SD=15.2$) had significantly higher scores than those with a two-year degree or less ($M=147.074, SD=17.7$).

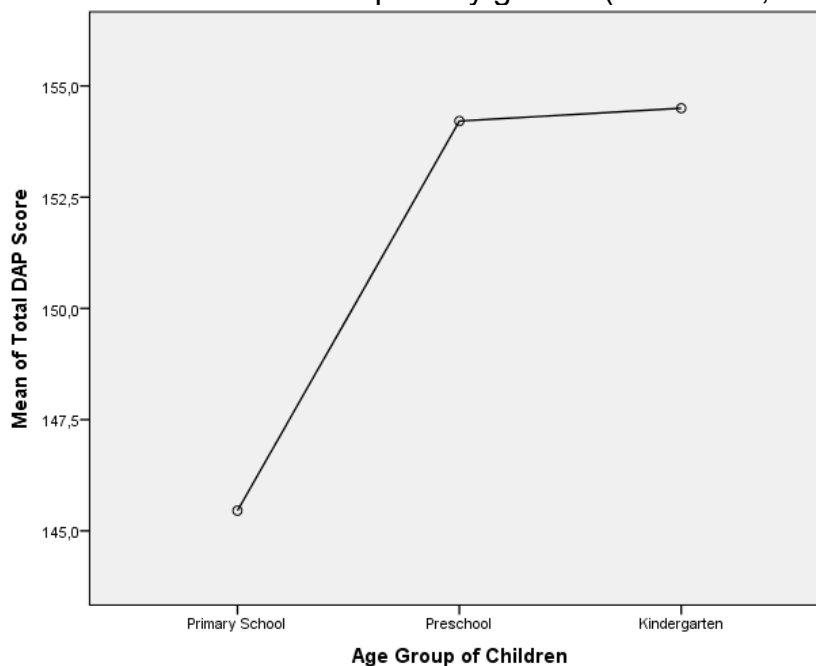


Location of school. Two-way ANOVA was conducted to examine whether there were significant differences in the total classroom activities scores of teachers from urban and rural schools. A significant difference was found between practices scores of teachers who work for an urban school and those who work for a rural school ($F(234)=.22, p=.05$). Results showed that teachers from urban schools ($M=154.18, SD=14$) had significantly higher scores than those from rural schools ($M=149.84, SD=14$).

Public or private school. Two-way ANOVA was conducted to examine whether there were significant differences in the total classroom activities scores of teachers from public and private schools. A significant difference was found between practices scores of teachers from public schools and those who worked for a private school ($F(235)=.757, p=.05$). Results showed that teachers from public schools ($M=154.125, SD=13.6$) had significantly higher scores than those from private schools ($M=149.16, SD=17$).

Age group of children. Two-way ANOVA was conducted to examine whether there were significant differences in the total classroom activities scores of teachers who work with different age

groups. A significant difference was found between practices scores of teachers who work with primary children and those who work with preschoolers and kindergartners ($F(2,235)=5.414, p=.005$). Results showed that preschool teachers ($M=154.21, SD=16.3$) and kindergarten teachers ($M=154.5, SD=12.9$) had significantly higher scores than those who teach primary grades ($M=145.45, SD=11.8$).



Discussion

The aim of this study was to explore how teachers of young children provide education in their classrooms in the countries participated in Erasmus+ KA project titled Experiential Education Competence (EXPEDUCOM) including Greece, Latvia, Lithuania, Portugal, Romania, and Turkey. More specifically, attention was paid to reveal to what degree developmentally appropriate practices were implemented in pre-k to primary programs.

A total of 237 early childhood and primary school teachers from Greece, Latvia, Lithuania, Portugal, Romania, and Turkey participated in the study. A expanded version of The Instructional Activities Scale with an addition of ten more questions that were developed based on NAEYC's recommendations for developmentally appropriate practices was administered to measure how often developmentally appropriate and inappropriate practices occur in classrooms. Participants were also asked questions about how often they addressed 21th century topics and skills.

Descriptive analysis of the data showed that it is a, reportedly, common and regular practice for the teachers participated in the study to offer developmentally appropriate activities including building with blocks, freedom to choose from a variety of learning areas, activities,

and projects, experimenting with writing by drawing, copying, and using their own invented spelling, playing with games, puzzles, and construction materials, singing, listening and moving with the music, working with art materials, integration of subjects, inquisitive skills, social skills, plenty of materials to explore and work with, communicating what they have learned, creativity, dialogue among children, given plenty of time, individual interests. Children's work was displayed in the classrooms. Teachers did not have much hesitation on using alternative assessment techniques.

However, data also showed that some other important elements of developmentally appropriate practices were not as regularly included in teaching even though they are critical in realization of the main goals of early education. A significant portion of the participants reported missing on those opportunities including hands-on math and science activities, structured gross motor activities, engagement with manipulatives, teaching about people with special needs and adapting materials for children with special needs, parent involvement, providing experiences to instill care for each other, use of media and technology, and organizing field trips. Similar findings were also reported by other researchers (Bilton, 2010; Bredekamp, 2004; Buysee, Wesley, & Keyes, 1998; Sarama & Dibiase, 2004; Wilson, 2008).

Even though the teachers in the study widely reported that they provided appropriate activities regularly from their answers to the questions about inappropriate practices it seems that a significant group of teachers also delivered inappropriate activities. There were a significant number of teachers who relied on commercially prepared phonics books. Use of worksheets and flashcards, cut and paste activities, teacher directed whole-class activities, and ability grouping were common practices among the participants. Fortunately, inappropriate disciplinary strategies including separation of children from their friends or putting them in time-out in order to maintain classroom order seemed not to be practiced by the majority of the teachers.

As far as promotion of 21st Century skills, it appears that teaching about sustainable development, environmental issues, critical thinking, language skills, human rights, care & empathy have become a widespread practice. Care and empathy received the most attention and seemed to be in the majorities' agenda. However, it is unfortunate that in today's ever globalizing world bearing serious immigration crisis as societies become more and more diverse the participants failed on providing regular experiences to teach children about multiculturalism and intercultural skills. In this globalized economy with electronic and social media have become widespread and largely accessible, media literacy has become a key skill to be acquired for the generations of the new century. Participants' inattention to cultivating media literacy

skills in their students have the potential to interfere with such other important subjects as care and empathy, human rights, and critical thinking they seemed to care.

Parallel to the finding by Fei (1995), this study showed that as teachers gain more experience their provision of developmentally appropriate practices increases. Also, as it was reported in McMullen & Alat's (2002) study, educational levels of teachers had a positive relationship with the appropriateness of their teaching. Teachers with only a two-year-college-degree engaged in developmentally appropriate teaching less than those with a bachelor's or advanced degrees. But unlike what McMullen & Alat found, having an advanced degree did not make any difference when comparisons were made between those with a bachelor's degree and those with advanced degrees. Again, congruent with previous research findings (McMullen, 1999), it was found that preschool and kindergarten teachers were more involved in developmentally appropriate practice than primary school teachers. Also, teachers who worked for public schools offered more appropriate activities than those from private schools. Finally, teachers who worked for urban schools were more committed to appropriate practices than those who worked for rural schools were.

The findings of this study prove that some major issues in teaching young children still persist in the new millennium. Despite decades of research providing a solid framework for effective pedagogies, there appears to be a broken link between theory and practice. Educational reform does not occur over night. It is essential that both practicing teachers and teacher candidates be given opportunities to gain experience in quality environments where developmentally appropriate practices are endorsed and realized. Teacher educators and administrators should design professional development trainings based on empirical evidence that describes in detail what makes a teacher training program work. Ongoing teacher training, effective mentorship, collaboration between the universities and schools, and easy access to resources could help teachers make the connections between the theory and practice.

References

- Bilton, H. (2010). *Outdoor learning in the early years: Management and innovation* (3.baskı). NY: Routledge.
- Bowman, B.T., S. Donovan, & M.S. Burns. (2000). *Eager to learn: Educating our preschoolers*. Washington, DC: National Academies Press.
- Bredekamp, S. (2004). Standards for preschool and kindergarten mathematics Education. In D. H. Clements, J. Sarama & A. M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp. 77–82). Mahwah, NJ: Lawrence Erlbaum Associates.

- Buysee, V., Wesley, P. W., & Keyes, L. (1998). Implementing early childhood inclusion: Barrier and support factors. *Early Childhood Research Quarterly*, 13, 169-184.
- Copple, C., & Bredekamp, S., (2009). *Developmentally appropriate practice in early childhood programs serving children birth through age 8* (Third ed.). Washington, DC: NAEYC.
- European Commission/EACEA/Eurydice/Eurostat. (2014). *Key Data on Early Childhood Education and Care in Europe*. 2014 Edition. Eurydice and Eurostat Report. Luxembourg: Publications Office of the European Union.
- Fei, G. J. (1995). *Kindergarten teachers' beliefs and practices: Assessing teachers' use of developmentally appropriate practice in Massachusetts*. Unpublished doctoral dissertation, University of Massachusetts, Amherst.
- Hayes, C.D., J.L. Palmer, & M.J. Zaslow, eds. 1990. *Who cares for America's children: Child care policy for the 1990s*. Washington, DC: National Academy Press.
- McMullen, M. B. (1999). Characteristics of teachers who talk the DAP talk and walk the DAP walk. *Journal of Research in Childhood Education*, 13, 216-23.
- McMullen, M. B., Alat, K. (2002). Education matters in the nurturing the beliefs of preschool caregivers and teachers. *Early Childhood Research & Practice*, 4.
- Sarama, J. & Dibiase, A. M. (2004). The professional development challenge in preschool mathematics. In D. H. Clements, J. Sarama & A. M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp. 415-446). Mahwah, NJ: Lawrence Erlbaum Associates.
- Stipek, Deborah, & Byler, Patricia. (1997). Early childhood education teachers: Do they practice what they preach? *Early Childhood Research Quarterly*, 12(3), 305-325.
- Wilson, R. (2008). *Nature and young children: Encouraging creative play and learning in natural environments*. New York: Routledge.

ANNEX

TEACHER PRACTICES QUESTIONNAIRE

Your answers to this survey are confidential. Reports of findings will not use your name or schools.

Please tell us about yourself:

- Age _____
- Gender: ____ Male ____ Female
- Educational level completed

☐ Middle school
☐ High school
☐ Two-year college
☐ Bachelors
☐ Master
☐ Doctoral
- College Major _____

Please tell us about your teaching career:

- How many total years have you taught? _____ years
- What age group/grade do you currently teach? _____
- Where is your school located? Urban area _____ Rural area _____
- Is your school a) Public : _____ b) Private : _____

For the following questions, please think about how often children in your classroom do the following activities.

1	2	3	4	5			
Almost Never (less than monthly)	Rarely (monthly)	Sometimes (weekly)	Regularly (2-4 times a week)	Often (daily)			
1.	build with blocks	1	2	3	4	5	
2	select from a variety of learning areas and projects (i.e., dramatic play, construction, art, music science experience, etc.)	1	2	3	4	5	
3.	have their work displayed in the classroom	1	2	3	4	5	
4.	experiment with writing by drawing, copying, and using their own invented spelling	1	2	3	4	5	
5.	play with games, puzzles, and construction materials (e.g., Thinker Toys, Bristle Blocks)	1	2	3	4	5	
6.	explore science materials (e.g., animals, plants, wheels, gears, etc.)	1	2	3	4	5	
7.	sing, listen, and/or move to music	1	2	3	4	5	
8.	do planned movement activities using large muscles (e.g., balancing, running, jumping)	1	2	3	4	5	
9.	use manipulative (e.g., pegboards, Legos, and Unifix Cubes)	1	2	3	4	5	

10.	use commercially-prepared phonics activities	1	2	3	4	5
11.	work in assigned ability-level groups	1	2	3	4	5
12.	circle, underline, and/or mark items on worksheets	1	2	3	4	5
13.	use flashcards with ABCs, sight words, and/or math facts	1	2	3	4	5
14.	participate in rote counting	1	2	3	4	5
15.	practice handwriting on lines	1	2	3	4	5
16.	color, cut, and paste pre-drawn forms	1	2	3	4	5
17.	participate in whole-class, teacher-directed instruction	1	2	3	4	5
18.	sit and listen for long periods of time until they become restless and fidgety	1	2	3	4	5
19.	have the opportunity to learn about people with special needs (e.g., a speaker or a character in a book)	1	2	3	4	5
20.	receive rewards as incentives to participate in classroom activities in which they are reluctant participants	1	2	3	4	5
21.	see their own race, culture, language reflected in the classroom	1	2	3	4	5
22.	get placed in time-out (i.e., isolation, sitting on a chair, in a corner, or being sent outside of the room)	1	2	3	4	5
23.	experience parents reading stories or sharing a skill or hobby with the class	1	2	3	4	5
24.	engage in child-chosen, teacher-supported play activities	1	2	3	4	5
25.	draw, paint, work with clay, and use other art media	1	2	3	4	5
26.	solve real math problems using real objects in the classroom environment that are incorporated into other subject areas	1	2	3	4	5
27.	get separated from their friends to maintain classroom order	1	2	3	4	5
28.	engage in experiences that demonstrate the explicit valuing of each other (e.g., sending a card to a sick classmate)	1	2	3	4	5
29.	work with materials that have been adapted or modified to meet their needs	1	2	3	4	5
30.	do activities that integrate multiple subjects (reading, math, science, social studies, etc.)	1	2	3	4	5
31.	use variety of media and technology	1	2	3	4	5
32.	build on their informal learning experiences and knowledge	1	2	3	4	5

33.	engage in activities that strengthen their problem-solving, inquiry skills and reasoning processes	1	2	3	4	5
34.	have plenty of opportunities to communicate what they have learned	1	2	3	4	5
35.	are encouraged to be creative	1	2	3	4	5
36.	talk and exchange ideas with each other during activities					
37.	are taken to field trips	1	2	3	4	5
38.	are given ample time to engage in what they explore and manipulate concepts/ideas with keen interest.	1	2	3	4	5
39.	are provided many daily opportunities for developing their social skills (i.e., cooperating, helping, talking) with peers in the classroom.	1	2	3	4	5
40.	are engaged in activities that are responsive to individual children's interests.	1	2	3	4	5
41.	are provided plenty of materials to engage in and explore	1	2	3	4	5
42.	are assessed for their development and learning using alternative assessment methods (portfolios, observations, anecdotes, record keeping etc.)	1	2	3	4	5

For the following questions, please think about how often the topics below become a part of your teaching?

1.	Sustainable development	1	2	3	4	5
2.	Environment	1	2	3	4	5
3.	Multiculturalism	1	2	3	4	5
4.	Intercultural skills	1	2	3	4	5
5.	Critical thinking	1	2	3	4	5
6.	Media literacy	1	2	3	4	5
7.	Language skills	1	2	3	4	5
8.	Human rights	1	2	3	4	5
9.	Care and empathy	1	2	3	4	5

PART C.

**EXAMPLES OF EXPERIENTIAL
BASED LEARNING DEVELOPED IN DIFFERENT
COUNTRIES**

Chapter 6.

CASE STUDIES ON EXPERIENTIAL EDUCATION IN KINDERGARTEN

Alphabetical Country Order:

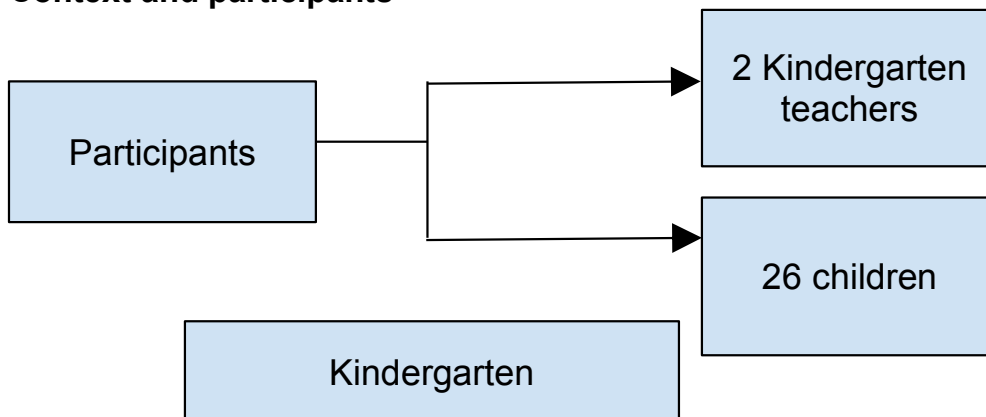
Case Study no.	Country	Title of the case-study
1	Greece	<i>Teaching Mathematics In An Experiential Way</i>
2	Latvia	<i>Three Little Piglets And A Wolf</i>
3	Lithuania	<i>Experiential Learning Project "Friendly Vegetables"</i>
4	Lithuania	<i>Experiential Learning Project "I Care About Our Nature"</i>
5	Lithuania	<i>The Smart Games</i>
6	Lithuania	<i>Experiential Learning Activity "Math Outdoor"</i>
7	The Netherlands	<i>Enrich Outdoor Education By ICT</i>
8	Portugal	<i>Winning The Race</i>
9	Portugal	<i>Germinating Seeds</i>
10	Romania	<i>Experiential learning project in early childhood education: Floating Raisins</i>
11	Romania	<i>Geometrical Shapes Through Outdoor Learning</i>
12	Romania	<i>Experiential learning project in kindergarden: Invisible Ink</i>
13	Turkey	<i>Healthy Life Style</i>

6.1. TEACHING MATHEMATICS IN AN EXPERIENTIAL WAY

**Athena ALEXOPOULOU,
Eleftheria BETEINAKI,
Xrysa DERZEKOU,
Moscha KAPSALI,
Marina TZAKOSTA⁵**

**Department of Preschool Education,
Faculty of Education, University of Crete, Greece**

Context and participants



The topic dealt with in our preschool classes was the teaching of mathematics, more specifically geometry and size. The reason we opted for this topic was because, on the one hand, mathematics is so abstract that preschool and early primary school teachers try to avoid to deal with, and, on the other hand, our experience is that mathematics “is everywhere” and highly contributes to experiential learning. The teaching intervention presented here has been applied in 2 public kindergartens (kind1 – N = 16, kind2 – N = 10). Two kindergarten teachers were present as moderators when needed.

⁵ martzak@edc.uoc.gr

Pedagogical approaches

For the design of our teaching intervention we took the principles of child-centered teaching, globalization, actuality, supervision and experiential education into consideration. Then, we tried to produce experiential activities following the axes underlying EXPEDUCOM. The theories we opted for in the design of our materials are:

- The Project approach (cf. Knoll 1996, 1997)
- Constructivism (cf. Jacobsen, Eggen & Kauchak, 2006)
- Multimodality (cf. Kendrick et al. 2006)
- Political education in school (cf. Kalantzis & Cope, 2013)
- Vygotskian Theory (cf. Vygotsky 1962)
- Multiple intelligences (cf. Gardner 1983, 1993, 1999, 2004, 2006)
- Experiential Education (cf. Kolb 1997, 1981, 1984)

Given the difficulty behind teaching mathematics to preschool children and following Andersson & Gullberg (2014), we decided to use children's earlier and previous experiences in order to better design our teaching intervention. Therefore, we interviewed the children in order to understand the mathematical topics they themselves were interested in.

Finally, we opted for an infantile and easily accessible way of teaching mathematics. Therefore, the best way to unfold our ideas was through a child-directed story accompanied by physical activities which enabled preschool children understand geometry. Finally, we sang a song about geometrical shapes and made a poster with children's relevant drawings.

Teaching and learning experience (description)

a. Preparations – teaching design

i. Interviews

Our teaching was developed in two phases realized in one whole school day. During the first phase we interviewed the children one-by-one aiming to record their earlier impressions regarding mathematics and their learning needs. Interviews were videotaped and lasted for approximately 5 minutes.

- Do you know what mathematics is?
- Is mathematics important?
- What would you like to learn more about mathematics?

What children found most interesting was working with numbers, sizes and shapes. Therefore, we decided to develop a teaching intervention which would combine the teaching of all three mathematical aspects, following the project approach (cf. Knoll 1996, 1997).

ii. Writing the story

We wrote a story which would serve as the main tool for the teaching of mathematics and geometry. Our central idea was related to the importance of recycling. The major characters, i.e. the geometric

shapes, were looking for the right bin they should be placed in. Geometric shapes could talk, dance, play and have fun, just like children. Children's stories maintaining magic elements are attractive to children and pedagogical/ education are disseminated more effectively (cf. Strauss, 1996).

iii. Organizing the psychokinetic (physical) activity

The fundamental philosophy for the design of the psychokinetic (physical) activity was to help children realize what mathematics and geometry are, perceive their importance for everyday life, and apply them in real life according to their needs.

b. Teaching intervention - implementation

Our teaching intervention started with story-reading and story-telling. Various geometric shapes were looking for their bins, since people were placing them in the wrong bins of the wrong sizes. Then, we had a 10 minutes discussion with children during which we made some comprehension/ understanding and consolidation questions. We further asked children to find similarities and differences between various geometric shapes.



Subsequently, children participated in the physical activities. The experimenters and the moderators associated different geometric shapes with different musical pieces. Then, they also showed children that distinct geometric shapes should be placed in different recycling bins. The bin associated to each geometric shape was marked by a specific color. However, since each geometric shape could appear in different sizes, these shapes of different sizes should be placed in different bins. Therefore, we made various bins of the same color.

As a result, children had to pick up the 'correct' geometric shape associated to the music children were listening to. Then, they had to put each shape in the correct bin. When these activities were completed, children counted the number of shapes placed in each bin.

In a addition, they tried to figure out the shapes of different objects found in their classes.



Finally, children were asked to draw different geometric shapes and make a poster with them in order to inform our parents and friends about our newly acquired knowledge.



c. Aims of the designed activities

- Language
 - *Oral communication*
Children are expected to be able to a) describe, b) to be able to explain and interpret facts
 - *Reading*
Children are expected to be able to understand/ comprehend and retell a story, b) to draw information from written speech.
 - *Writing*
Children are expected to understand the importance of writing as a means of communication and to produce their own written texts.
- Environment
Children are expected to a) detect similarities and differences between different geometric shapes, and, b) develop their language, communication skills and use of ICT.
- Expression
Children are expected to a) try to interpret mathematics and geometry through arts, b) express themselves through acting, playing and co-operating.

Findings & discussion - reflection

The pre-teaching interviews showed that there was little information regarding the use of geometric shapes in everyday life. During the teaching intervention, children were deeply interested in the topic and fully engaged in the activities. There seems to be some differentiation between younger and older children; in other words, the older the preschooler the better they scored with the geometric shapes recognition. Parents reacted positively regarding our teaching methodology and the materials we used in it.

Using in other contexts and age groups

The case study presented here was designed for the needs of preschool classes. However, our teaching could also be applied in all primary school classes as long as the necessary modification – so that our teaching could be incorporated in the primary school curriculum - took place.

References

Books

- Andersson, K. & Gillberg, A. (2014). What is science in preschool and what do teachers have to know to empower children. *Cultural Studies of Science Education* 9, 275.
- Cope, B. & Kalantzis, M. (2013). Towards a new learning: The Scholar social knowledge workspace, in theory and in practice. *E-Learning and Digital Media* 10, 332-356.
- Gardner, H. (1993). Multiple intelligences: The theory in practice. Basic Books.

- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*, Basic Books.
- Gardner, H. (1999). *Intelligence reframed: Multiple intelligences for the 21st Century*. Basic Books.
- Gardner, H. (2004). *Changing Minds: The art and science of changing our own and other people's minds*. Harvard Business School Press.
- Gardner, Howard (2006). *Multiple Intelligences: New Horizons in Theory and Practice*. Basic Books.
- Jacobsen, D., Eggen, P., & Kauchak, D. (2006). *Methods for teaching: Promotion student learning in K-12 classrooms*. Pearson.
- Kendrick, M., Jones, S., Mutonyi, H., Norton, b. (2006). Multimodality and English education in Ugandan schools. *English Studies in Africa* 49.1, 95-114.
- Knoll, Michael (1996). Faking a dissertation: Ellsworth Collings, William H. Kilpatrick and the "project curriculum". *Journal of Curriculum Studies* 28, no. 2, pp. 193-222.
- Knoll, Michael (1997). The Project Method: Its Vocational Education Origin and International Development. *Journal of Industrial Teacher Education* 34, 59-80.
- Kolb, D. A. (1976). *The Learning style inventory: Technical manual*. McBer & Co, Boston, MA.
- Kolb, D. A. (1981). Learning styles and disciplinary differences. *The modern American college*, 232-255.
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development* (Vol. 1). Englewood Cliffs, NJ: Prentice-Hall.
- Strauss, S. (1996). *The Passionate Fact: Storytelling in Natural History and Cultural Interpretation*. Golden, CO: North American Press.
- Vygotsky, L.S. (1962). *Thought and Language*. Cambridge, MA: MIT Press.

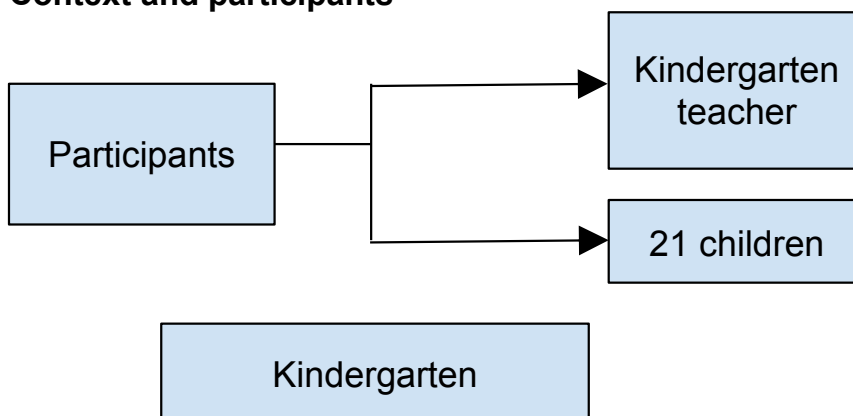
E-references

- https://www.unhcr.gr/fileadmin/Greece/Extras/education_symbiosis/Symbiosis_project_manual_final.pdf
- http://accesstomedia.org/wp-content/uploads/Documents/youthMADE_PerfectImmigrant_lesson.pdf
- <http://www.pi-schools.gr/download/publications/epitheorisi/teyxos6/deloudi.PDF>
- http://www.i-red.eu/resources/projects-files/scedio_drasis-eisagogi-viomatiki_mathisi.pdf
- <https://refugeesgr.wordpress.com/2016/01/26/%CE%BC%CE%B9%CE%B1-%CE%BC%CE%AD%CF%81%CE%B1-%CF%83%CF%84%CE%BF%CE%BD-%CE%B5%CE%BB%CE%B1%CE%B9%CF%8E%CE%BD%CE%B1/>
- https://www.google.gr/search?q=%CF%80%CF%81%CE%BF%CF%83%CF%86%CF%85%CE%B3%CE%B9%CE%B1+%CF%80%CE%B9%CE%BD%CE%B1%CE%BA%CE%B5%CF%82&espv=2&biw=1366&bih=643&source=lnms&tbn=isch&sa=X&ved=0ahUKEwiNjO2-wLXJAhUBSBQKHUpPCVgQ_AUIBigB#tbn=isch&q=refugees+paintings
- http://www.lifo.gr/articles/society_articles/85362

6.2. THREE LITTLE PIGLETS AND A WOLF

**Marija TOLPEŽNIKOVA⁶,
Dace BRINKA⁷,
Daniela Anda POSTNIKOVA⁸,
Anete PLŪME⁹,
Riga Teacher Training and
Educational Management Academy, Latvia**

Context and participants



Pedagogical approaches

Fairy tale telling gives children the opportunity to explore story and understand better its content. Children can better understand characteristics of characters in the story and understand their action if they had experienced the story for themselves during retelling and play.

Learning process through personal experience is very important for development of cognitive competence and understanding the subject.

⁶ mtolpeznikova@gmail.com

⁷ dace.brinka@gmail.com

⁸ anda.postnikova@gmail.com

⁹ anjeeet2@gmail.com

Experiential learning based on learning allows connecting children's previous experience with activity, and during activities each children can learn according to his/her development.

Let children to explore different situations and change activity if necessary, avoid too long activities, consider the fact, that preschool child can turn attention to one continuous activity.

Teaching and learning experience (description)

The activity was developed with a group of 5-6 year olds. In this activity children compare different materials which can be used for building a house and observe the influence of air and water to the stability of the structures and properties of materials. The activity also improves the quality of communication skills and group cohesion.

Materials: puppets (5 piglet hand puppets, 1 wolf hand puppet), 5 balloons, straws, branches, paper, scissors, Legos, sugar cubes, water sprayer.

Planification of the experimental work

1st Step: Fairytale about 3 piglets and a wolf is used as a base for experiment to connect children's experience with learning situation and creates motivation for work. Children know the fairytale and are keen to experience it in the reality.

2nd Step: Teacher has a discussion with children about different materials. They try to build houses for piglets from Lego bricks, branches, sugar cubes, paper and straws. Children have opportunity to explore materials - touch them, smell them, compare size and weight.

3rd Step: Children can observe and understand the differences between building materials. They can learn which material is more stable by using practical experiment. Children are divided in groups to work with any material.

4th Step: All five groups of children begin their activity. They decide together how to build the house. They can get teachers help, if necessary. They realize that some houses can be faster done than the others. The house which is more stable and strong will take more time to build.

5th Step: Children are actors now and they are telling the story. The wolf goes from house to house and tries to blow the house down.

Main findings or discussion

6th Step: Children have a discussion about the results of the experiment. Children realized how difficult it is to build a house. Some houses take longer time to make, some are really easy to make. Each group expresses their discoveries in some sentences about the stability of construction and the properties of materials.

Reflection

During the experimental work:

- The children learned how to work in a team;
- Observed difference between different building materials;
- The teacher was involved in the process, so the children learned how to participate in every activity;
- The children were encouraged to participate in the fairy tale as actors.

Using in other contexts and age groups

This storytelling situation can be successfully used in different age groups. It is necessary to know children's age and cognitive skills level. During experiential learning teacher more and more takes place as advisor and observer.

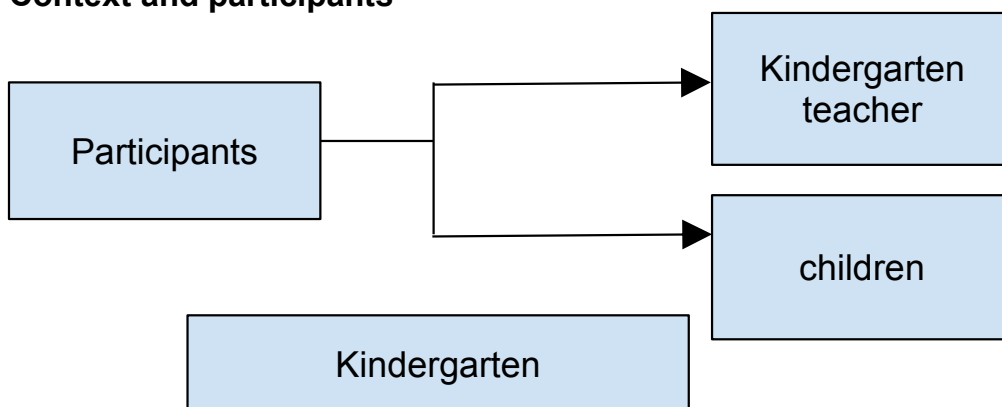
References

- Bullard, J. (2014). *Creating Environments for Learning: Birth to age Eight*. 2 nd ed. Upper Saddle River, NJ: Pearson.
- Kolb D. (2007) *Experiential Learning Cycles. Act, Reflect, Conceptualize, Apply*. Retrieved from <http://www.edbatista.com/2007/10/experiential.html>
- <http://www.science-sparks.com/2015/07/24/three-little-pig-houses/>

6.3. EXPERIENTIAL LEARNING PROJECT “FRIENDLY VEGETABLES”

**Renata GRIGELIONYTĖ¹⁰
Edita MARTINKĖNIENĖ¹¹
Kaunas kindergarden “Vaikystė”, Lithuania**

Context and participants



Pedagogical approaches

Direct experience of the natural world can motivate positive environmental action especially when supported by adults who express and demonstrate care for the environment. To take care of your own garden children learn how to apply skills and manage risks in a “real world” setting. Children learn to care about the school grounds and look after them better.

Teaching and learning experience (description)

The activity was developed with mixed age group of 4-6 years for 3 months. The problem of the Project – healthy lifestyle. Children

¹⁰ grigelionyterenata@gmail.com

¹¹ editamartin1@yahoo.com

continue to learn new skills and ideas about food when eating away from home, being at kindergarten. Children spent the most part of their day at kindergarten. They have three meals there. It was noticed by teachers and parents, that children avoid eating vegetables. The aim of the Project - To make vegetables „friendly meal” for the children. Making meals together can also be an educational and fun activity.

Project progress

1st Step: Project progress accent - an approach that **successful development** depends on the result of the **child's activity** in the educational process. Therefore, the **child** was an **active** participant of the project at all stages. The discussion with the children about the problem “What do I think about vegetables eating?” were instrumental in finding the causes of the problem. Here are some children's reflections:

- Children love cabbage, beets, cucumbers (Mėja)
- Most children love sweets, because they contain a lot of sugar and sweeter (Luiza)
- You need to accustom them to eat vegetables, because their teeth become so small. You need to accustom them to drink water. (Beatričė)
- My mom just bought a cucumbers and I love to eat them with honey. (Saulė)
- I don't like mixed vegetables with oil. (Tadas)

2nd Step: Program of activities. The program of activities has been developed together with children, their parents and teacher. Here are some ideas:

- Play vegetables theater (Ben's mother)
- The production of vegetable juice (Marta's mother)
- Grow vegetables (Luknė)
- Go to the vegetable market (Paulius).

3rd Step: Working Programme

At first our goal was to encourage children to taste the different flavours of the food. The kindergarten teacher organized various activities helping to know a variety of tastes. The main task - to arouse the curiosity of children and to encourage children to be active in using as many senses.

- Exploring the feature of vegetables during the play. Children blindfolded tasted vegetables, described their taste, and experimented by creating vegetable flavour combinations.
- Competing, whom's spring onion will grow longer.
- Exploring the feature of vegetables during the cooking, creative activities.



- Herbs sowing inside and outside, taking care of them, exploring and observing.



Reflection

- Children are interested in tasting of different vegetables: they are discussing about the taste of the vegetables, started to differ their tastes;
- They started to notice the differences between vegetables and found the favourite tastes for themselves;
- It was made different meals from vegetables by their offers, and they ate them with positive emotions;
- Vegetable garden differs every year, according children wishes.

Using in other contexts and age groups

After this project it was planned to include different, separate vegetables into the menu, not only vegetable salad.

The project activities encouraged to share the gained experience with other colleagues from the other kindergartens, where the educational agendas were supplemented with food making and gardening activities.

The project can be developed with different age groups, including more difficult things to grow, not just vegetables.

Gardens can differ every year with their plants, there can be berries, herbs, flowers and etc.

References

- Aberdeen city outdoor. *Outdoor Nurture Project*, Aberdeen City Council 2011. Link on the internet: <http://creativestarlearning.co.uk/wp-content/uploads/2015/06/Aberdeen-City-Outdoor-PLODS.pdf>.
- Monkevičienė O. and others., 2014. *Ikimokyklinio amžiaus vaikų pasiekimų aprašas*, Švietimo ir mokslo ministerijos švietimo aprūpinimo centras ISBN 978-609-460-102-6.

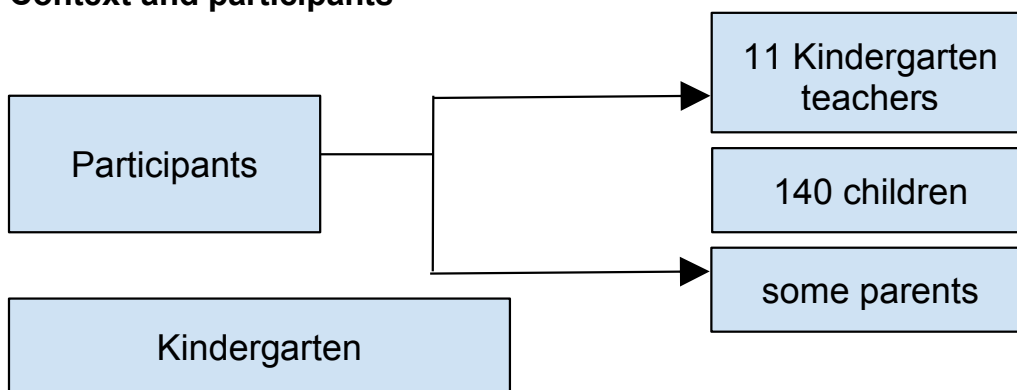
6.4. EXPERIENTIAL LEARNING PROJECT “I CARE ABOUT OUR NATURE”

Edita MARTINKĖNIENĖ¹²

Renata GRIGELIONYTĖ¹³

Kaunas kindergarden “Vaikystė”, Lithuania

Context and participants



Pedagogical approaches

Outdoor spaces and places can present to develop problem – solving strategies. Children are exposed to far more varied and multifaceted issues and challenges in an outdoor environment. These can be used skillfully to engage them in the application of a wide array of skills and knowledge in response to challenges.

It is said, that children, who spend more time in a natural environment, they have a better knowledge about nature. They want to take care of the nature. Time to observe patterns, sequences and events in the world can develop an understanding of relationships, inter–dependency and cause and effect.

Teaching and learning experience (description)

¹² editamartin1@yahoo.com

¹³ grigelionyterenata@gmail.com

The aim of the project – eco thinking at preschool. Childhood is the most favorable age for the children's formation of provisions. Environmental pollution problems preschooler realize actively acting in the immediate environment. During the project will be developed in various areas of children's abilities: observation, exploration, creativity, be developed in various areas of children's abilities problem-critical thinking. Activities will be organized in groups of kindergarten and outdoor surroundings. In cooperation with the family

Project progress

1st Step: The **discussion** about the environmental problems was raised after the educational performance "What the stork was afraid of?" were the teachers were playing the story when the stork came back from Africa and he saw how people are polluting the nature. The children naturally started to evaluate which behaviour was wrong in that performance and the teachers had some problem solving questions for the children to help them to discuss. Some considerations of children was:

- Those people were really bad. The stork could get sick. The rubbish should be thrown in the recycle bin. (Tajus);
- It is not allowed to litter in the forest (Ieva);
- The fishes can die (Gabrielė);
- My mummy always pick up our litters, when we are going home (Mėja);

2nd Step: Program of activities. The program of activities has been developed together with children, their parents and teachers. Here are some ideas:

- To build "the different city" using paper boxes (teacher Edita);
- To set up the recycling containers from the paper boxes in the yard of the kindergarten (Ema's mother);
- To arrange „The fashion show“, wher all the clothes would be made of the litter (Lėja's mother);
- To go and clean up the forest (Tadas);
- To create the game by using secondary raw materials (teacher Renata);
- To write down the rule „It is not allowed to leave the litter in the forest“ and hang it on the tree (Gytė).

3rd Step: Working Programme.

During the project it was held a lot of activities, and implemented some of the parent's, teacher's and childrens' ideas. Every teacher were responsible for their group activities.

- It was held the working group called “Many hands big onus can raise”, right after the performance. During that activity children, parents and teachers were picking up the litter in and outside the territory of the kindergarten. Here the children started to fantasize what interesting they could do or make with the litter they found.



- The problem solving thinking, creativeness and cooperation with other children or adults by trying to communicate how to create interesting games, toys and measures was acting important role in the children's' learning when they were creating games and costumes from the secondary raw materials.



- The creating games was adapted not only for the individual play, but also for the small groups or the teams. Then the idea arose to organize the small sport fiesta called “Arise for the second life”



Reflection

- Cooperating with the closest environment children were gained experience about the pollution damage to it. Kids noticed that the small insects, small plants under the litter are dying, children were sad about the people who doesn't take care of our nature. It was the main point, which encouraged children to write a letter for those who are polluting the nature. In that letter they were philosophizing about the harming the nature where we live.
- Children were supplementing each other with their own experience and knowledge, by cooperating and collaborating they were learning from each other.

- Children were active and initiative: encouraged and taught the family members and their friends, to accomplish the project ideas at home too.
- Children wanted to recycle the litter during and after the project in the kindergarten and at home.
- After the project most of the groups made the recycle bin for the paper.

Using in other contexts and age groups

The project ideas are planned to fulfill and add into the pre-school group's agendas, every year they will be renewed and filled with the new parent's, children's and teacher's ideas and recommendations.

The project could be held with different age groups adopting it with different tasks and ideas.

References

- Fjoroft, I. & Sageie, J. 2001, *The natural Environment as a playground for children: the impact of outdoor play activities in pre-primary school children*, Early Childhood Education Journal 29 (2): 111-117.
- Robertson J., (2014) *Creativity outdoors in the early years. Ideas suggestions and activities*. Creative STAR learning company.
- Monkevičienė O. ir kt., 2014. *Ikimokyklinio amžiaus vaikų pasiekimų aprašas*, Švietimo ir mokslo ministerijos švietimo aprūpinimo centras ISBN 978-609-460-102-6.

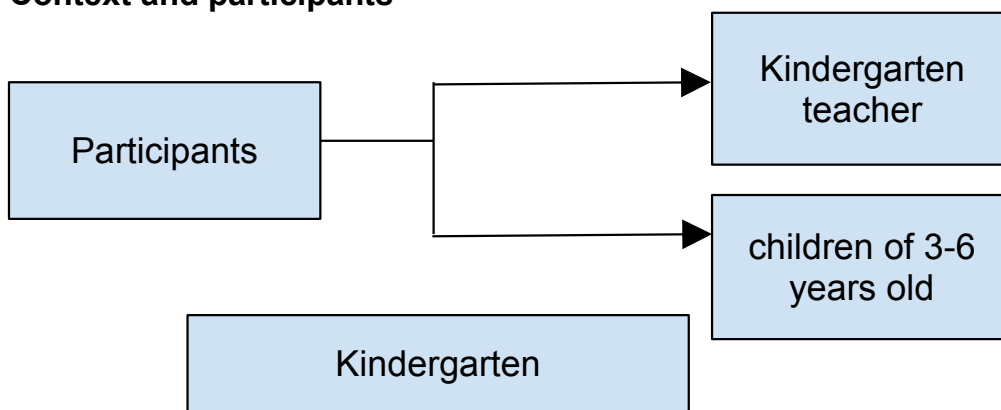
6.5. THE SMART GAMES

Renata GRIGELIONYTĖ¹⁴

Edita MARTINKĖNIENĖ¹⁵

Kaunas kindergarden “Vaikystė”, Lithuania

Context and participants



Pedagogical approaches

The discussion on the use of the ICT by very young children has given rise to some controversy between those who defend, more or less warmly, the educational benefits of technology and those who object to it for various reasons.

There is now a general agreement amongst different specialists that ICT can support a child's skills as well as can create a developmental appropriate learning environment depending on their needs and the curriculum requirements. Many studies have supported the view that ICT can foster the literature, early mathematics, cognitive, emotional-social, motor skills and enhance the creativity of kindergarten children.

Teaching and learning experience (description)

¹⁴ grigelionyterenata@gmail.com

¹⁵ editamartin1@yahoo.com

The activities was developed with the groups of 3 to 6 years. With these activities we want that children be active and integrative in different activities at one time.

Planification of the experimental work

1st Step: These activities arose after the seminar for the pedagogues, where the lector showed how differently the Smart Board could be used in the learning process. Teachers know how much children love to play computer games, and they were looking the ways how to include the games into the learning activities to achieve the goals, which are important for the particular child or for the group of different children.

Teachers made an interview with children, what they would like to do when they are playing computer games. Some children ideas:

- I would like to paint (Ema);
- I want to write my name (Lina);
- I want to hunt some animals (Liudvikas);
- I would love to play guitar (Arminas);
- I want to sing (Aistis).

Considering children's wishes teachers cooperated into small groups and were creating some games using The Smart Notebook 11 program.

2nd Step: It was important to find out the parents opinion about the ICT use in the learning process. There was held a survey, to find out if the children's parents will support this idea, to use ICT in the learning activities. Most of the parents said, that the computer could be used in the kindergarten if it is used not only for games, but also for the educational aims"

- I like the idea to use computers, cameras, Smart phones or Smart Board in the learning process (Miglė's mother);
- We could give our old computer to create new area in the group, where children could use it only for their games (Tada's parents);
- I would love to learn how to create those games for the children too (Aronas mother);
- We hope you will share the created games, and we could use them at home too (Tajus Mother).

3rd Step: The games were created considering the children's, parent's and teacher's suggestions. Moreover the created games were adopted to the every group's agenda and the themes on that period of the year. Themes of the games:

- Ecology;
- Spring flowers;
- Forest;

- Princesses and pirates;
- Numbers;
- Letters;
- Fairytales;
- Friendship;
- Etc.

The games were played in the other class, where the Smart Board was, there the group of children could play separately from all of the group. The games were selected for the appropriate group of children, who needed to deepen their knowledge in one or other subject. When the Smart Board was occupied by other groups, children every time could play the same games on the computer in their group.

Main Finding or discussion

4th Step: the games were created by different activities:

- Older children were learning to know and recognize the names of the flowers, compare them by the different features. Children could count and manipulate with numbers or geometrical figures. Kids learned to understand the amount, figures set in the space. There were the notes in every game, so children could recognize the letters, they could try to read. With the help of these games children started to recognise the connection between the written word and the picture.
- Computer games helped to include passive children into the learning activities. For those who doesn't like to be with group of children, teacher suggested to play some game on the computer, later on including a child into the group of children, where they are finding similarities between each other's, sharing their experience in playing computer games.
- Every child wants to play with the Smart Board, so there were developed their cooperation and collaboration. Children had to accept the rules and create them while playing with the Smart Board, it was important to deal by themselves, who will be the first, the second and etc.
- The situations, created in the games encouraged children's critical thinking, they had to make decisions and chose the wright or wrong thing to make the situation go on.

5th Step: The games are reused more times. It depends on teachers and children creativity. Every time teacher can create different rules for the same game, or add more tasks to make it more difficult and encouraging children's critical thinking.

Reflection

Observing the activities with the Smart Board, we noticed that children:

- Had an opportunity to be creators, gained courage to take risks, fantasize and interpretate what they see on their own way;
- Were educating the ability to consult, negotiate and coordinate with each other, express their opinion, don't criticize and accept the different point of view.
- Enriched their experience about the surrounding world, gain new knowledge and skills.

Using in other contexts and age groups

The described process has been developed with the kindergarten children, it is possible for other ages too, just adjusting the games or tasks by their age. Teacher should be more observing than acting in those activities. Teacher creates games and tasks by the children's needs and abilities, but the children can interpret them on their own too.

These activities became the part of our educational agenda.

References

- Athanasios S. Drigas, and Georgia K. Kokkalia, (2013), *ICTs in kindergarten*. iJET – Volume 8, Issue 2.
- Amante L., (2007). *The ICT at Elementary School and Kindergarten: reasons and factors for their integration*. Sísifo/educational sciences journal·no.3· ISSN 1646 - 6500
- Monkevičienė O. ir kt., 2014. Ikimokyklinio amžiaus vaikų pasiekimų aprašas, Švietimo ir mokslo ministerijos švietimo aprūpinimo centras ISBN 978-609-460-102-6.

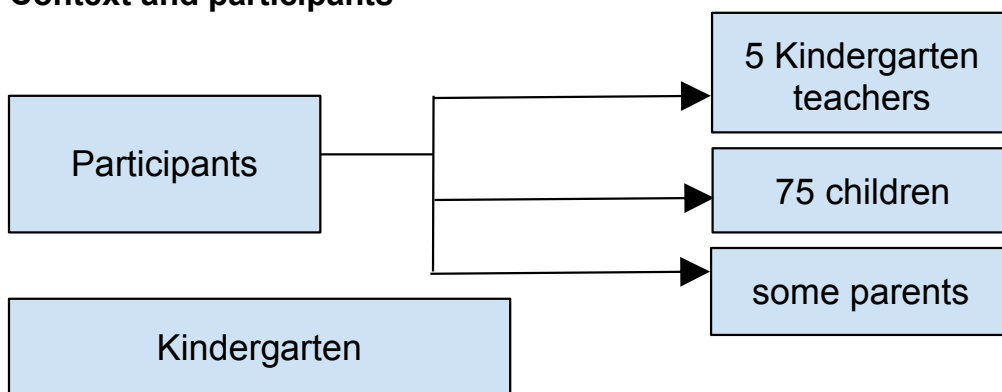
6.6. EXPERIENTIAL LEARNING ACTIVITY “MATH OUTDOOR”

Renata GRIGELIONYTĖ¹⁶

Edita MARTINKĖNIENĖ¹⁷

Kaunas kindergarden “Vaikystė”, Lithuania

Context and participants



Pedagogical approaches

It is usual to educate mathematical children's thinking inside in the kindergarden. Children are suggested to play some mathematical games, tasks, but the teacher should find some new, interesting and interactive ways to involve children into the mathematical activities. The world is a mathematical place. Everywhere there are angles, shapes, moving objects, patterns to behold, numbers to count and investigations to be undertaken. It is a creative, challenging and wondrous way of looking at life and exploring any outdoor space.

The outdoor environment is natural experimenting laboratory. The unpredictable nature of the outdoors encourages resourcefulness in both children and practitioners. Maths helps make sense of the world

¹⁶ grigelionyterenata@gmail.com

¹⁷ editamartin1@yahoo.com

in which we live and understand both the order and certainty and well as random events and their chances of happening. By exploring the size, quantity, shape and patterns outside us learn so much more about our immediate surroundings in an interdisciplinary way.

Teaching and learning experience (description).

The activity was organized with the pre-school children (3 – 6 years) outside. It was oriented to educate children's mathematical skills by using the natural outdoor environment. The planned activities were for calculating things, for understanding the amount, for measuring, for cognition of the geometrical figures and for the orientating in the space.

Planification of activity

1st Step: looking for the ideas in the literature, on the internet and collecting the natural materials. The families were involved into this preparation process, they were looking for the natural materials in the forest, park or anywhere outside. The families collected leaves, cones, sticks, stones etc.

2nd Step: The activity was organised for the children individually and for the groups. Some of the ideas:

- To fill in the cup with the chosen natural materials till half, till full etc. Children were sharing their experience with their friends after the activity: they were counting the things which were in the cup, were comparing the amount of the collected items with each other.
- The teamwork – to lay down the natural materials into the contour of the painted geometrical figure. To fantasize with the friends which things they could create from that figure.
- Maths integrated with the arts. 1. To create the sun by using the stones, where the 5 stones would consist one sunbeam. 2. To decorate the tree by using berries. Every tree stick should have one more berry than the one before.



- Measuring the objects which are outside the kindergarten (trees, sticks, gaming equipment, etc.): by width, length and height, using your body (fathoms, spans, feet) or natural materials. These activities had to be done together with the friends.





3rd Step: During the activity, the teacher was asking some provoking, children's curiosity and problem solving encouraging questions, which were requiring to analyze, summarize and to solve the problems:

- Who collected more/less/ the most?
- How many units more?
- What to do to have more?
- Why there are more items in Jonas 'cup, while both cups are the same size?
- Which object is the thickest/longest/widest?
- Why the bag with the chestnuts is lighter than the bag with the stones, if the amount of them are the same in the both bags?
- Let's guess, how many children can enclasp the oak?
- Etc.

Reflection

- The outdoor environment was filled with the natural materials, which made the possibility to create manipulating games during the free or organized children's activities in the future.
- During these activities children were satisfying the children's social – emotional needs, strengthened the personal children's skills and let to share their own mathematical skill experience with others.
- The activity was integral: children were fulfilling not only their mathematical but cognitive, social, creative, problem solving and experimental skills too.
- The tested activities were suggested for families, to implement them at home too.

Using in other contexts and age groups

The ideas which were tested and used in our kindergarten are planned to share with the other kindergartens too. It is planned to extend the boundary of the activity, transferring them by organizing

excursions to the woods, parks etc. Parents can be involved into the mathematical material's creating process: they could make the weighing – machine, wooden rulers, dishes with the measuring scale etc.

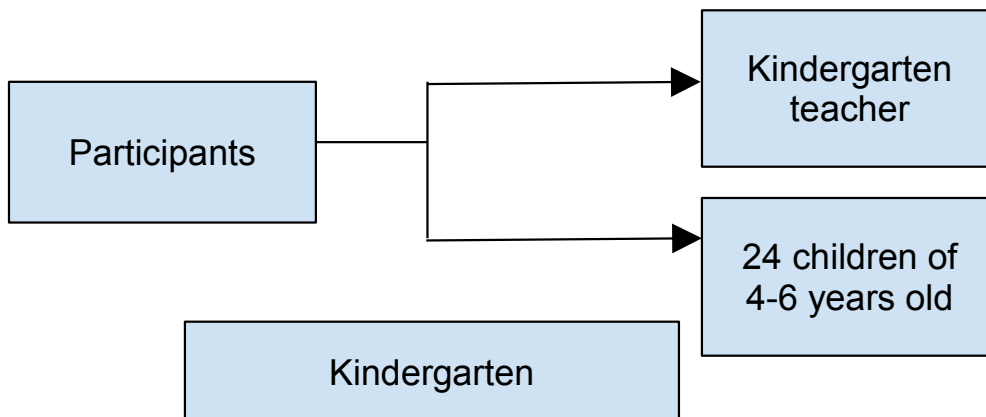
References

- Robertson J., (2014). *Maths outdoor in the early years. Ideas, suggestions and activities*. Creative STAR learning company.
- Monkevičienė O. and others., (2014). *Ikimokyklinio amžiaus vaikų pasiekimų aprašas*, Švietimo ir mokslo ministerijos švietimo aprūpinimo centras ISBN 978-609-460-102-6.

6.7. ENRICH OUTDOOR EDUCATION BY ICT

**Frank van HERWAARDEN¹⁸,
Marnix Academie, The Netherlands**

Context



This teaching experiment started end of 2013 as a proposal for an innovation project of Kennisnet, the Dutch public organization for Education & ICT (<https://www.kennisnet.nl/about-us/>). Together with schools, Kennisnet develops, makes sense of and distributes knowledge on the effective and efficient use of ICT as a preparation on 21st century skills. The teacher training colleges of the Marnix Academy, Utrecht, experiments with mobile learning in the environment outside to see what a tablet does for (future) teachers and their learners.

The project was based on three observations:

1. ICT in primary school is in many cases limited to showing the outside world through a digital projection screen. It claims to enrich the learning environment, but because it is deprived of

¹⁸ f.vanherwaarden@hsmarnix.nl

any experiential learning it, in fact, has hardly impact on the learners;

2. Much attention in education and teacher training colleges is given to the "what" (content), "how" (teaching methods) and "why" (aims and objectives) of teaching. But rarely the 'where'-question is discussed: Where can learning outcomes be acquired best?
3. Almost all students nowadays have experience of using a tablet or smartphone. But that does not mean that they make the link to meaningful use of such devices and apps in (environmental) education.

The Marnix Academy wanted to explore the value of learning in the real world. "Bringing the world to a digital board ... that is a false solution that will quickly lose its appeal. If you want to learn about the world you should go into and explore this real world. ICT can support that learning process very well."

Since then students design in groups of approximately 4 students an outdoor activity for children in the vicinity of their trainee school, using modern technologies, tablets and apps. At their disposal for each group is an iPad Mini with applications during the exercise and design phase, and 8-10 iPad Mini's with apps during the implementation phase.

Apps that were being used, involve: Augmented Reality (Aurasma); QR-code; Geocaching; Navigation (KliKlaKlu, EveryTrail Pro, CoRider); Timing and orientation (SunSeeker); determination keys (BooMld, Birds of Europe); History time lapse (HistoryPin); Reporting (iMovie, photo and text apps); Creativity (ComicBook, PuppetPal HD)

Pedagogical approaches

Many children nowadays have become estranged from nature, just by technology and media. The competition for 'going out' is increasing: computer games, television, etc. This project wants the best of both worlds: meeting with the real world along with media orientation.

Children learn from what they experience and perceive through sight, hearing, smell, touch and taste. They learn Hands on (application), Brains on (cognition), Hearts on (affection). That is the value of environment education, every teacher recognizes the value of learning in the real environment.

Rather than seeing ICT as the enemy of experiential learning, the challenge is to apply ICT in a 21st century way to enhance the teaching and learning experience of outdoor teaching: as an aid for navigation and orientation, having a digital encyclopaedia at hand, being able to report about their experiences in a creative way through multimedia solutions (film, photo, comic book, digital wall paper, prezi, drama, song) and enriched by augmented and virtual realities.

Since the start of the project approximately 30 groups of students have designed outdoor activities for their learners, ranging from cultural inheritance, natural experience bucket lists, time lapse in a WW II concentration camp to simple assignments in a children's animal farm. All of these projects have one thing in common: the application of ICT has proven to be an enrichment of the outdoor activities enhancing the involvement of the learners. In the remainder of this case study focus will be on the last example.

Teaching and learning experience (description)

Mobile learning suits learning in the 21st century. Students, as the teachers to be, should become familiar with the technological possibilities of ICT indoors as well as outdoors. By experimenting and 'playing' with the use of iPads during their teaching practice they finally dare to make educational use of ICT in such a way that their learners achieve more thorough understanding, experience learning in the real world with more fun and report their experiences in a more creative way.

Students are expected to promote "deeper learning" with the potential of ICT. With ICT tools, more didactic variation is possible. For example, it is easier to challenge multiple intelligences in children and satisfy different learning styles, in this way giving children the chance to gain different experiences.

The main condition to succeed is to ensure that the digital addition does not disturb the richness of the real world and the experience of the project. The device is no substitute for the reality but an amplifier of that reality. The digital enhancement, as well as the educational content, of the traditional field work is exciting.

24 kindergarten children in Gorinchem, the Netherlands, in the age of 4-6 year went with the student teachers to a children's animal farm. Each group of learners was given an iPad mini with several apps. Because the children's farm was fenced off it was a safe environment and few adults were needed to monitor the kids. Basically the only instruction given was how to switch between some few apps: a QR-code reader, a photo-app, a film app, etc.

At different places in the children's farm the kids found QR-codes displayed. By reading the code with the iPad, automatically a YouTube movie was started. The students had prepared these movies in advance playing out small dialogues with hand puppets, explaining simple assignments to the learners. Some few examples of the tasks for the learners were:



- Here you can smell the poo of a pig; go hunt for other types of poo and make photographs of your collection.
- All animals have their own footprints. Go hunt for them. Leave your own foot print, here in the sand pit
- Here is a cow. A cow produces milk. Make your own drawing of the 'route' of milk from cow to supermarket.
- Here in the hut you find all types of animal food. Feel, smell and look for differences. Try to match the food with the different animals in the farm.
- Here you can see chicken with their chicks. Can you put the flash cards in their proper order?
- In this meadow you can stroke all the animals that you dare. Which one is your favourite?
- In this box you find pieces of pelts of different animals. Can you name them?

Of course the possibilities of using the iPads in this setup was a bit limited by the age and capabilities of these learners. They did hardly use the iPads in a creative way, only limited to making photographs. But with help from iPads, learners performed the tasks with no further directions from their teacher, independent from input and assistance from adults. The iPad increased the involvement of the learners in their tasks, without these gadgets becoming the centre of attention.

Learning in the outside environment and during the excursion program was much more efficient and effective. Learners learned and experienced much more in different areas of interest, independent of adults.

Reflection

Some few reflections of students involved:

"Yesterday we carried out our outdoor activity, it was in one word 'fantastic'. We want to let you know that our Special Education learners, enjoyed the activity tremendously. Kids were incredibly involved and appreciated the different apps. We were so impressed that one boy, who cannot get along with the 'normal' curriculum, somehow was completely 'in his element'. He produced one picture after the other on the screen and found even a way to make a movie. It thus appears that maybe for these kids to work with an iPad, has a positive effect to handle the curriculum and achieve learning in a different way. We therefore hope that you are really getting more resources from the Marnix to make this kind of education in our teacher training lessons for other students. It was a super day!"

"Working with the iPads is new to the children, it evokes wonder and ensures a high level of involvement. The iPads are a nice addition to the rich learning environment of the children. They provide the additional information and clarification of assignments by the various

applications that we use. But the gadget never dominated attention for the real world: the look, smell, feel of the real things around them. Involvement was high, but not geared at the gadget itself, but on the tasks behind it."

Using in another contexts and age groups

From present experiences it shows that the above described approach is powerful in many different contexts and among all age groups. Of course the outcome is determined by things such as:

- The application of Higher Order Thinking Skills (Synthesize, Analyse, Create)
- The level to which creativity of the learners is addressed
- The creativity of the teacher and his willingness to go out of his comfort zone
- The application of Technological Pedagogical Content Knowledge (TPACK)
- The way the theme of the activity fits the social cultural background and age of the learners

However, the outcome is rarely determined by the iPad-skills level of the learners. So far it proves that the use of the iPads is so easy and intuitive that it is picked up by the learners without any hindrance. They use it to report their experiences in a creative way, express their ideas in an interactive manner, with a high level of self-direction. It is only the start of an evolutionary process in which technology can be used in an unobtrusive manner to enhance learning experiences indoors, but most of all outdoors in the Real World!

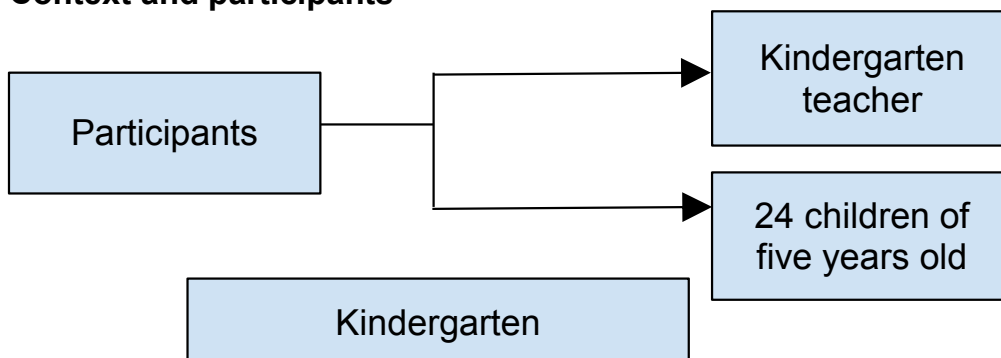
References

- <https://www.kennisnet.nl/about-us/>
- <http://www.tpack.org>

6.9. GERMINATING SEEDS

Alice ALVES,
Schools of Mirandela, Portugal
Cristina MESQUITA,
Polytechnic Institute of Bragança, Portugal
Maria José RODRIGUES,
Polytechnic Institute of Bragança, Portugal

Context and participants



Pedagogical approaches

Science activities provide opportunities for cooperation, negotiation, rules following, rights and duties understanding, group involvement learning, and education for citizenship. These are essential skills for critical thinking and to create, conscious, participatory and supportive autonomous citizens. The learning experiences developed in kindergarten constitute an excellent way to use procedures and skills such as: observing, recording, measuring, comparing, counting, describing, and interpreting. These skills are not exclusive of science; these are capabilities that enhance a holistic worldview. In this study we describe an experimental activity, in the scope of botany, associated with the conditions that allow seeds to grow. This subject is present in the everyday life of children and the discussion of these issues enables them to understand the world.

Teaching and learning experience (description)

The described learning experience is part of a broader project, developed over several months, called "Everything is different!"

Contextualization

During a visit to the park, the children gathered different materials (branches of trees and shrubs, leaves, stones, seeds ...). By observing the collected seeds, children found that there were several differences between them. To respond to the questioning of children, the teacher suggested to explore some activities that allow them to:

- Realize the diversity of seeds concerning its features;
- Verify that the germination of a seed originates a new plant;
- Recognize that even under the same environmental conditions, germination time is not the same for different kinds of seeds;

The experimental procedure is synthetized in table 1.

Contextualization	Visiting the park, children observed and collected different materials (branches of trees and shrubs, leaves, stones, seeds ...). By observing the seeds, children found that there were several differences between them. They observed and described that differences.
Question	Do different kinds of seeds take the same time to germinate under the same environmental conditions?
Didactic exploration	1st step: Exploring and completing the planning letter 2nd step: experimental activity (sensorial exploration of the soil and seeds – smell, texture and color). Choose the amount of water needed and the recipients; 3rd step: data collection (3 weeks, measurement of stems and leaves, photographic record or graphical representation to put on the record sheet); 4th step: conclusion on the evidence observed.
Systematization of learning	Different kinds of seeds are not all alike. Seeds come in different sizes, shapes and colours. All these differences mean that seeds germinate differently. Seeds of different species do not take the same time to germinate.

Table 1. Summary of the teaching-learning experience

With the seeds they found, and with others that the kindergarten teacher took to the classroom (tomato, pumpkin, beans, broad bean, peas, watermelon, nuts, almonds, chickpeas, lettuce, watercress), children classified, compared and weighted the seeds, discovering that they were different, even within the same species. Children found that some seeds were bigger than others, have different color and different textures.



Fig. 1 Sorting seeds according to their features

During the exploration the teacher asked about what would happen if those seeds were sown:

John: Plants will grow!

Kindergarten teacher: What kind of plants?

Rita: Different plants.

Because of that, the kindergarten teacher suggested that they should investigate on the internet and in books the plants corresponding to each seed.



Germination	Plant	Product

Fig. 2 Research for corresponding plants

Research question

After this the kindergarten teacher asked: Do different species of seeds take the same time to germinate under the same environmental conditions? The children replied:

- Yes. If we sow all today, all of the plants will appear at the same time.
- No! This one will appear first (referring to the bigger bean). It is bigger than the others and it has the strength to pierce the ground.
- The first to grow will be the one that will get the root first. It will then start to open the leaves.
- My mother puts her plants in the sun to grow. She told me that if the plants have a lot of sun, they grow healthy.
- Considering the children's responses the kindergarten asked?
- What do you think about doing an experience with different seeds to see what happens?
- All the children agree with that.

Planification of the experimental work

1st Step: in the experimental process children completed the plan. They tried to answer the following questions

- What will we observe?
- Which seed will grow first?
- What materials are needed for the experiment?
- We need soil, water, sunlight, pots and seeds.
- What will change?
- We will change the seeds. We have to put different seeds in each pot. In the pots we put the tomato, corn, beans, watermelon and pumpkin seeds.
- What do we keep?
- We will put the same amount of soil in the pot.
- We will always sprinkle with the same amount of water, measured with this cup. We will always water them in the same day.
- We will put them in the same place.
- Where should we put the pots?
- There, in the window, to have light.



Fig. 3 Planning Process

Experimental Work

3rd Step: The children put the soil in the pots, exploring its smell, texture and color. Then they labeled each pot with the picture of the corresponding seed. They put the seeds into the soil and watered them with the same quantity of water. They registered that in the grid. During three weeks, they continued the observations and took notes and pictures about the growing process of the seeds.



Fig. 4 Experimental Work

Main Finding or discussion

4th Step: In a large group the children and the kindergarten teacher discussed what they have observed and verified in order to answer the question they posed.

- This broad beans deceived me! It looked so strong and took a long time to stick to the ground.
- Me too! Corn was the one who won this race.
- A tomato seed is so tiny but did grow a strong plant with beautiful leaves.
- The corn plant was so high that Vânia had to take it into her garden.
- A watermelon seed is similar to pumpkin, but it took longer to grow.
- Bean took too long to be born, but it was so big that we had to go get a stick for it not to fall down.
- I think that it doesn't matter whether the seed is large or small. They know when to grow. It's like my sister that is in my mother's belly. Only she knows when she wants to get out.



Fig. 5 Checking the results

5th Step: The activity ends with the systematization of discoveries, where children are encouraged to express their conclusions and the teacher translates with appropriated language the results.

Children found that there is a wide variety of seeds. That the seeds do not take the same time to germinate, noting that the first seed to germinate was corn and the last pumpkin. They also found that the plant had different roots. The plant that grew the most was beans. Thus they realized that seed size does not determine the size of the plant and the seeds germinate and grow in different ways.

Using in other contexts and age groups

Although the process described in this paper has been developed under the pre-school education, transferability is possible for other levels of education. The procedures developed in the learning experience that include formulating problems, observing, planning, experimenting and discussing the findings, should be encouraged at all levels of education.

The teacher's mediating role and the children's center action are aspects that must be considered in the pedagogical interaction in schools.

In this regard, we believe that, with the appropriate adjustment of languages and considering the complexity of the issues and themes, this activity can be developed in different educational environments and age groups.

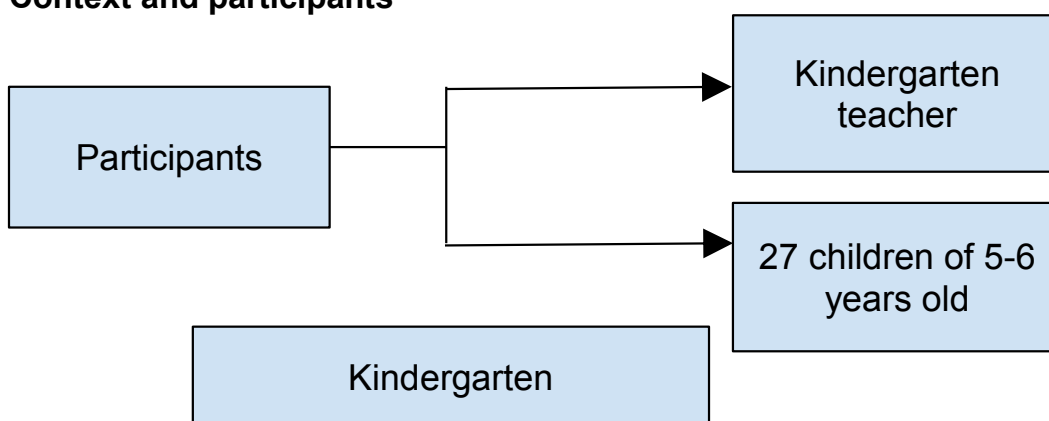
References

- Martins, I., Veiga, M. L., Teixeira, F., Tenreiro-Vieira, C., Vieira, R. M., Rodrigues, A. V., Couceiro, F. e Pereira S. (2009). *Despertar para a ciência – actividades dos 3 aos 6*. Lisboa: Ministério da Educação, Direcção-Geral de Inovação e Desenvolvimento Curricular.
- NRC. (1996). *National science education standards*. Washington, DC: National Academy Press.
- Martins, I., Veiga, M. L., Teixeira, F., Tenreiro-Vieira, C., Vieira, R. M., Rodrigues, A. V. e Couceiro, F. (2006). *Educação em Ciências e Ensino Experimental – Formação de Professores*. Lisboa: Ministério da Educação, Direcção-Geral de Inovação e Desenvolvimento Curricular.

6.10. EXPERIENTIAL LEARNING PROJECT IN EARLY CHILDHOOD EDUCATION: FLOATING RAISINS

**Gianina-Ana MASSARI ²²,
Elena LUNGU ²³,
Faculty of Psychology and Education Science,
Alexandru Ioan Cuza University of Iasi, Romania**

Context and participants



“... children easily forget what they said or what they were told, but not what they did or was done.” (Rousseau, 1973, 77).

Pedagogical approaches

Valuing the role that the child’s personal experience has in learning is not a new principle in pedagogy 1762 - J.-J. Rousseau, 1938 - J. Dewey; 1947 K. Lewin, 1969 - C. Rogers, 1970 - J. Piaget, 1984 - D. Kolb; 1987 - P.Jarvis), but tends to become essential in education.

Children start asking recurrent questions when they can not explain the events and phenomena around them. The explanations received help shape a meaning. But the explanation is not sufficient, as the rich

²² gianina.massari@gmail.com

²³ lenuslungu1963@yahoo.com

experience of adults does not automatically become their experience, no matter how explicit it is transposed into words! Meaning occurs when the child experiences himself phenomena and life situations, observing them in a reflective manner, integrating information in conceptual structures that subsequently allow their adaptation to new relevant contexts.

Curiosity is a fundamental characteristic of the small child's personality but for a child to understand the world in which he lives, his teacher must create real opportunities for active exploration of the environment. Planning, organizing and conducting a wide range of activities based on concrete actions and encouraging reflection on the experiences are necessary actions undertaken during the preoperational time of early education. This behavior can effectively support the educational process of transition from concrete-intuitive thinking of the child to operative thinking and determines the adequacy of operational behaviors associated with real life in certain circumstances.

In this study we describe an experimental work from the field of physics: a solid body floating on the surface of a liquid is determined by the relation between the densities of the two substances. This topic is important as an application to protect human life and safety both in the context of learning how to swim and in major force on the water.

Teaching and learning experience (description)

The activity was conducted with a group of children aged 5 to 6 years. Through this activity we wanted preschoolers to observe and understand what is happening with a few raisins (solids with a mass less dense than water) when immersed in turn in plain water, then salty water and then in highly sparkling water. The process described in this paper is rather one designed to draw their attention to children that floating is easier in the seawater compared to water in the pool and it is necessary to use an inflatable object prior to the acquisition of swimming skills and / or sometimes in other critical situations of life.

Planification of the experimental work

1st Step: This work originates from the discussion that took place between two preschoolers: the first was complaining that he is afraid of deep water since he had a bad experience - had fallen into a pit of water relatively deep-, the other was proudly stating that he knows how to swim.

In order to identify previous ideas of the children, the teacher asked them whether they had fears about deep water or what they liked and what they felt was happening to their body during the experiences they've had.

The series of questions has been extended to all children in the classroom: what can I say about water, what is it, if you know how to swim, where they learned to swim if they have hovered ever on the water, where it seemed easier – in the pool or in the sea - if they have benefited from objects that support them to remain at the surface and what were these objects. Also, we updated the children's knowledge acquired in a previous experiment on the states of aggregation of water, reminiscing the notions of solid, liquid and gas.



2nd Step: A second phase of the experimental process was to draw up a plan:

a) *What do we see?*

- Children are summarized the purpose of the experiment and I verify if they memorized the explanation. (*Let's see what happens to the raisins in each glass of water* - Miruna)

b) *What materials will we need?*

- We'll need three tall glasses.
- Why do the glasses must be tall? (*To have time to see if the raisins float.* - Miruna; *Because the pit that Victor fell in was also deep ...* - Răzvan; *To accommodate plenty of water!* - Nathalie)
- What do we put in the glasses? (*Water!* – John; *Water and raisins!* - Matthew; *All of them!* - Ioana)
- What kind of water do we put into the first glass? (*Plain water!* - Ioana)
- But in the second? (*Saltwater! I swallowed salt water when I was at the seaside!* - John)
- How do we obtain saltwater? (*Put salt in the water!* - Matthew I.; *Yes, and mix!* - Ioana)
- What kind of water do we put in the third glass? (*Sparkling water!* - Smaranda)
- What else do we have on the table? (*Three bunches of raisins* - Iasmina)
- How many raisins are in each lot? (*Four* - Nathalie)

c) *What do we already know about the materials we work with?*

- What kind of substance is water if it flows? (*If flowing, it is liquid* - Matthew)
 - Are raisins also flowing? Then how can we call them? (*_? _*; *They are thick* – Dragos; *So they are solid* - teacher)
 - Is the air liquid or solid? Does it flow? It is hard? (*Does not flow but also doesn't sit still like the raisins.* – Matthew; *Air is light and rises up like steam from a pot of food* - Cati; *No, those are the vapors!* – David; *Air enters everywhere* - Filip)
 - What happens if salt is placed in water? (*The water becomes salty* - Mateiaş; *The salt dissolves!* - Ilinca)
- d. *What will we change?* (*Water!*) How much water will we pour into each glass? (*Up to the sign drawn on each glass.*)
- e. *What can we not change?* (*Raisins! There must be the same number of raisins in each glass!* - David)
- f. *Why must they be placed equally in each glass?* (*_? _*; ...; *For there are three cups and three groups of raisins.* - Matthew D.; *In order to see if the same thing happens to all.* - Filip)



Experimental Work

3rd Step: There are three tables in front of the class, and on each there is a transparent glass and four raisins. Two children and the teacher take turns in pouring liquid into glasses as follows:

- a. Plain water is poured in the first glass until it is three quarters full and four fresh raisins are sprinkled on the surface. ***The raisins are sinking.***
- b. The second glass is half filled with water, then 5 tablespoons of salt are gently mix (without fully dissolving the salt), plain water is then added until the cup is three quarters full, carefully, mixing the composition as little as possible. ***Raisins only sink halfway.*** (If on each of the first and third glass works only one child, in this case, the teacher will prepare the mixture as the desired result is only achieved if the two types of water do not interfere completely, respectively the salt does not entirely dissolve.)

c. In the third glass, highly carbonated water is poured up to three quarters and the 4 raisins are sprinkled. ***Initially the raisins will sink to the bottom of the glass, and then they are lifted by the air.*** The process continues until all of the air leaves the water.



Main Finding or discussion

4th Step: The discussions that followed the observation activity did not aim directly for the theory of the relationship between the densities of the two substances, preschoolers can not yet differentiate between mass and weight (some of them having specific problems related to understanding conservation quantity).

The focus was on verbalization of the observation, the teacher asking questions like: What was the purpose of our work? What

happened in each glass? Everyone has noticed the same thing? Why do you think it happened? How do you explain that raisins have behaved differently? What helped them to not sink or float? What did you like? What did you not like?

We present just one of the findings of the children that will be the starting point of a future experiment:

- *The raisins are not light!* - Ioana
- *If raisins were made of iron, the air could not raise them.* - John
- But the boats are made of metal, how they float? - Teacher (*They have engines!* - David)
- And when the engines stop, do they sink? (_? _) Ships hold air inside, air that helps them float. - educator

Also, after completing the practical experience, the teacher guided the children so that they can make logical connections between issues seen and their own life experiences, and retain information that can serve them with future interactions with the environment: *What I learned from what I noticed ?; How do we call this phenomenon ?; Have you encountered similar situations? People can float on water? What objects helps us float on the water surface when we want to learn to swim or play in the water?; What are inflatable objects filled with? Are there any differences between the ease of floating / swimming at the pool and the way we do at in the sea? Is seawater salty enough so that we do not need to take protective measures? What are the consequences if we did not do so?*

5th Step: Children were encouraged to issue some conclusions based on the reflections on what they observed in the experiment, and the teacher systematized these conclusions:

1. (*Raisins are heavy and sink in plain water!* - Răzvan) Thanks to 'weight' (mass denser than liquid), the raisins in the first cup sink to the bottom.
2. (*In salt water sink less, not completely to the bottom* - Iasmina) When raisins reach the water surface of the second glass, they sink in clear water, but they will stop halfway in the cup, where they "bump" into the saltier layer of the liquid.
3. (*Air helps raisins to go up, to float* - Nathalie).

When the bubbles (carbon dioxide) "stick" to the surface of raisins, the fruits are propelled to the surface, where the fizzy bubbles burst. Without being supported by "air", raisins plunge again to the bottom of the cup.

Also, the teacher encouraged the children to verbalize the meaning / usefulness of what they have previously observed and discussed in their subsequent interactions with the environment: (*In non-saline water, like in the swimming pool, it's more difficult to float and we must use floaties or pads, otherwise we sink to the bottom.* - Matthew)

(At the sea it's easier to float because the water is salty, but still need to have inflatable cushions because there are waves and it's dangerous. - David)



Reflection

The experiment resulted in the exercise of the habit of voluntary concentration of attention on issues of the surroundings, relevant to children's interests, and favored reflections on the necessary security measures in the children's lives in the aquatic environment.

By using the method of systematic observation and learning through discovery, analyzes were supported, comparisons and synthesizer and heuristic conversation facilitated in the orientation of thinking and acting of the children to clarify the information conveyed.

The Reflective observation and the knowledge transfer exercise in different contextual situations contributed to some extent to the understanding and establishing causal relationships between objects and phenomena.

Using in other contexts and age groups

If the teacher understands experience as a continued exchange between the subject and the environment in which it lives and values his role of mediator in this process, he creates timely educational contexts , sufficient to assist the child to understand why and how things happen around him and which are the ways to adapt to the acquisition of appropriate behavior towards objects, phenomena, situations.

In this sense, this experiment can be a part of a long series, we can consider observations on the floating / sinking of other solids in water (paper, cork, wood, plastic, stone, pieces of metal, etc.), more so as to lower ages thinking peculiarities limits the understanding of the phenomenon as a whole.

It is expected that the understanding (at first rather intuitive and minimal) on the phenomenon of objects floating on the water and the conditions under which it occurs to induce the practice of prudent behaviors, desirable at the age of egocentrism.

Although the preschooler can learn things in an individual manner, it is recommended that experiential activities take place in groups, discussions between children of the same age and group cooperation support the learning process.

As for the aspects of the relationship between the densities of two substances, issues concerning gravity, of clarifying confusion on the concepts of mass and weight of the bodies can be discussed and analyzed at adulthood, so other learning activities towards our study are not only necessary, but are imposed.

References

- Dewey, J. (1938). *Experience & Education*. New York, NY: Kappa Delta Pi. ISBN 0-684-83828-1.
- Kolb, D. A. and Fry, R. (1975) *Toward an applied theory of experiential learning*. in C. Cooper (ed.), *Theories of Group Process*, London: John Wiley.
- Kolb, D.A. (1984). *Experiential Learning: Experience as the Source of Learning and Development*. Englewood Cliffs: Prentice-Hall.
- Rousseau, J.-J. (1973), *Emil sau despre educație*. București: Editura Didactică și Pedagogică
- Sălăvăstru, D. (2016), *Învățarea experiențială în educația timpurie*. In *Educația timpurie – probleme și soluții*, Stan L. (coord.), Editura Polirom, Iași.

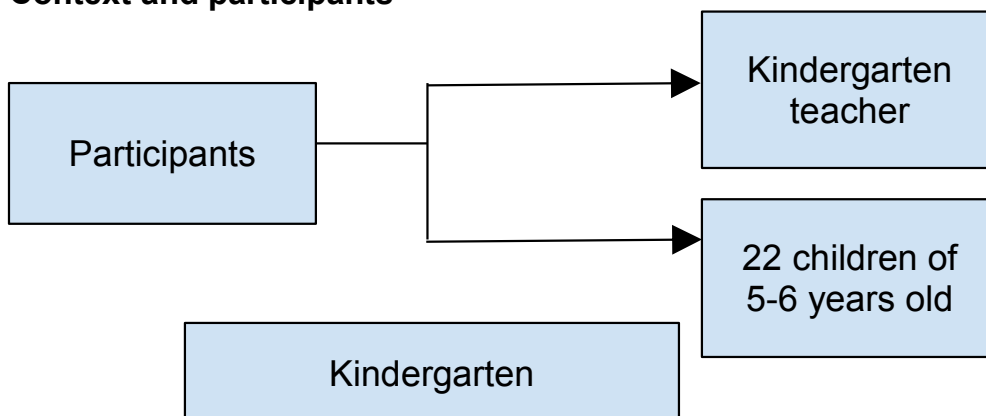
6.11.GEOMETRICAL SHAPES THROUGH OUTDOOR LEARNING

Gianina-Ana MASSARI²⁴,

Liviu-Alexandru CALFA²⁵

**Faculty of Psychology and Education Science,
Alexandru Ioan Cuza University of Iasi, Romania**

Context and participants



Pedagogical approaches

So far, geometry enjoys a high appreciation for its practical character, and also for the contribution that it makes to the personality development in general and rationality in particular.

Using specific geometry activities in nature can help develop students' rationality since it is well known that students perceive the surrounding nature, acquire knowledge, they acquire a certain attitude towards various natural phenomena. Nature attracts with its beauty, its variety and the multitude of colors, shapes, smells and sounds.

Teaching geometry aims at enriching students with knowledge that is clear and precise about real world objects' shape, size and

²⁴ gianina.massari@gmail.com

²⁵ liviu_calfa@yahoo.com

properties, and also aims at forming and developing spatial representations skills in pupils, applying in a practical way their knowledge of geometry measurements, establishing sizes and distances, calculating areas or volumes.

A trait of kindergarten and primary education is that teaching geometry is primarily focused on students forming sharp and clear images of geometric figures and supplementing these images with basic concepts that will provide a report to teaching the following classes of the systematically geometry course and a basis for the development of reasoning (Petrovici, 2014).

Teaching and learning experience (description)

Through this activity students can observe similarities and differences between certain geometric figures and make connections between them.

Planification of the experimental work

First step: The activity presented was meant as an activity that gives the student the opportunity to explore and investigate ways of drawing a geometric figure scientifically correct.

As a specific activity for children 6-7 years, in classroom activities they usually failed to correctly draw geometric figures.

2nd Step: What do we want?

The main objective: Improving the drawing technique of geometric shapes by making geometric figures using small / large sticks;

The secondary objective: To identify the number of geometric figures in drawings;

To specify the components of a geometric figure (angle, side, top).

Experimental Work

Materials: colored chalk, large / small sticks, small cubes

Procedure:

Establish a perimeter for the activity. Verify if in the default zone there are sticks of different sizes (12 big sticks and 12 small sticks for each group).

Each group will get colored chalk and cubes of different colors.

The groups must seek in established area the 12 large sticks and 12 small sticks.

Each group must draw on the pavement using geometric figures.

Using a code that was previously presented, students will identify the components of a geometric figures and mark them with colored chalk.

Each group must prepare the ground and materials for making the drawing.

In the composition of the drawing, children must use as many figures as possible.



Main Finding or discussion

4th Step: After making the drawing, will discuss with each group about the geometric figures used to make the drawing presented and how many they used.

On a board students will observe a few letters and symbols. Using colored chalk, groups must identify through colors and codes, different attributes of geometric figures.

A-Angles

S-Side

T-Top

P-Parallel sides

R-Perpendicular sides



Reflection

This activity aimed to raise awareness of geometry and build self-confidence.

By using objects and changing environment, the concepts have been understood and internalized, the students managed to correct themselves in terms of geometrical figures on paper drawing technique.

Using in other contexts and age groups

The activity could continue in a fun way, students must approximate how many students could enter inside a geometric figures.

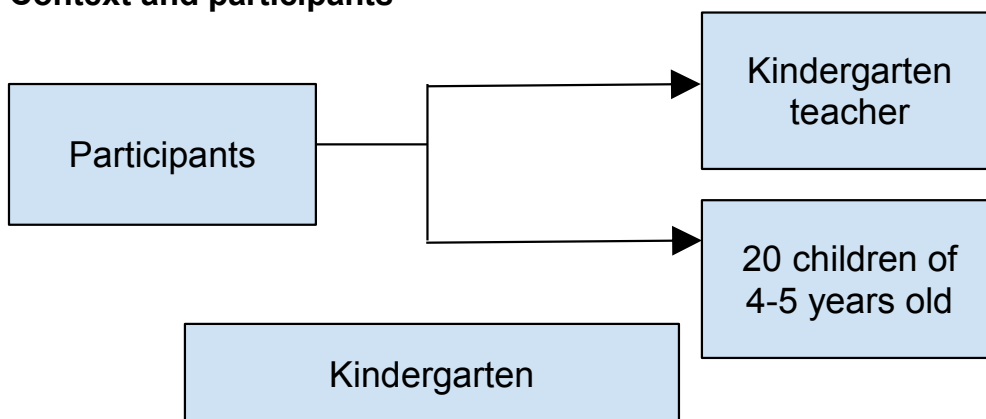
References

- Petrovici, C., (2014), *Didactica matematicii pentru învățământul primar*, Iași: Ed. Polirom;
- Șoitu, L., (2013), *4D în Educație*, Iași: Institutul European.

6.12. EXPERIENTIAL LEARNING PROJECT IN KINDERGARDEN: INVISIBLE INK

**Florentina Manuela MIRON ²⁶,
Gabriela CERCELARIU ²⁷,
Faculty of Psychology and Education Science,
Alexandru Ioan Cuza University of Iasi, Romania**

Context and participants



Pedagogical approaches

Science activities provide opportunities for cooperation, negotiation, rules following, rights and duties understanding, group learning involvement, and education for citizenship.

The learning experiences developed in kindergarten constitute an excellent way to use procedures and skills such as: observing, recording, measuring, comparing, counting, describing, and interpreting (Massari, 2014).

In this study we will describe an experimental activity based on how to create and use invisible ink. Invisible ink activity combine science

²⁶ mironmanuela@yahoo.com

²⁷ cercelariu.gabriela@yahoo.com

with fun and is a great way to encourage fine motor growth and peak interest in education.

Teaching and learning experience (description)

The activity is developed with a group of preschool children. This type of activity is helping children to foster curiosity, promote creative and critical thinking, to explore the real world (Massari, 2013). They will test and play, and they will learn through questions and hands-on experiments.

Planification of the experimental work

This activity only require a few supplies:

- Lemon juice
- A Q-tips
- a heat source (e.g.: a light bulb)
- sheets of white paper.

We have to pour the lemon juice into a small bowl. This will be our ink. Then we will dip the Q-tip into the ink and use it like a pen to write on the paper.. Once we have finished we will let the message dry. Once dry, it disappears until you hold it up to a heat source like a light bulb. Then the writing turns a brownish color.

1st step: This activity is based on the fact that kids are natural tinkers. The purpose of this process is to encourage their curiosity and creative thinking.

2nd Step: The second step in the experimental process is based on the following items :

- reactions of the children when using invisible ink
- their thoughts and explanations while writing on the white paper
- their reactions while holding the paper to a heat source
- their thoughts about the whole experiment

Experimental Work

3rd Step: Children will have to pay attention at the changes produced during the experimental process.

Main Finding or discussion

4th Step: The discussion of the observed data is focused on the before and after differences.

5th Step: The activity ends with the systematization of discoveries, where children are encouraged to express their conclusions.

Reflection

During the experimental work children are valued by:

- the learning by discovery;
- the involvement in the process;
- their explanations about the whole experimental process.

Using in other contexts and age groups

Although the process described in this paper has been developed under the preschool education, transferability is possible for other levels of education. The procedures developed in the learning experience that include formulating problems, observing, planning, experimenting and discussing the findings, should be encouraged at all levels of education.

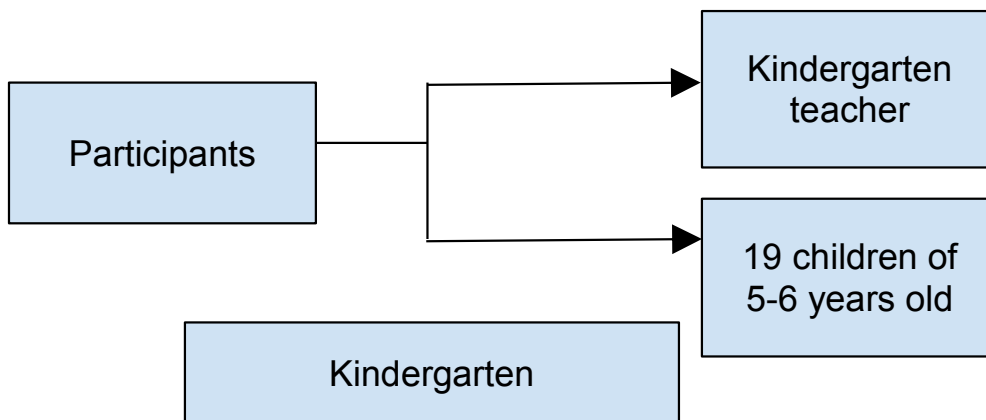
References

- Kolb, D. A. and Fry, R. (1975) *Toward an applied theory of experiential learning*. in C. Cooper (ed.), *Theories of Group Process*, London: John Wiley.
- Massari, G. (2014). *Theory and Methodology of Instruction*, pp. 3-97, in *Manual for Pedagogy of Preschool and Primary School Education*, Iași: Alexandru Ioan Cuza University Publishing House.
- Massari, G. (2013). Best practices in outdoor education, in *4D in Education*, Iași: European Institute.
- Rousseau, J.-J. (1973), *Emil or about education*. București: Editura Didactică și Pedagogică.

6.13. HEALTHY LIFE STYLE

**Kazim ALAT²⁸,
Ondokuz Mayıs University, Turkey**

Context and participants



Turkish children living in urban areas are physically less active than their counterparts living in rural areas. Teachers generally tend to focus on art activities and academic skills and give less emphasis on free play and physical activities. A recent research on Turkish preschool teachers' views on outdoor activities revealed that the teachers were not including outdoor activities in children's daily schedule (Alat, Akgumus, Cavali, 2012).

The participants of this case study consisted of 19 children (5- and 6-year-olds) who were attending to a public kindergarden program in Samsun, Turkey. During regular teaching hours the classroom has one teacher and one teacher trainee.

Pedagogical approaches

Young children are capable of engaging with the objects around them, explore, observe, hypothesize, experiment, make

²⁸ kazim.alat@gmail.com

interpretations, and construct their own knowledge (NAEYC, 2009). Throughout the day, children engage in different kinds of activities that aim to improve them in all areas of development including cognitive, social, emotional, language, and physical activities. Among these physical activities can help children build and maintain healthy bones and muscles thus contributing their overall health.

Through activities teachers provide children opportunities to define problems, observe, hypothesize, experiment, compare, make inferences and associate with real life. In this case study we describe an experimental activity that focuses on healthy life style.

Teaching and learning experience (description)

Before starting the activity we talked about how to stay healthy, things to do for living healthier, and what healthy lifestyle means. Through this discussion we wanted to explore children's existing knowledge about healthy lifestyle. During the discussion children expressed:

- Exercising is important for staying healthy (Ahmet)
- Eating vegetables, fruits, tomato (Çisem)
- It means to drink milk (Berk)
- We need to pay attention personal hygiene (Sema)
- To wash our hands, to brush our teeth (Yunusemre)

Planning of the experimental work

1st Step: We started with warm up exercises with music. We have chosen this activity to help children develop physical skills and learn the importance of exercising in their life for staying healthy.



2nd Step: The class was divided into 2 groups and each group were given two baskets: One basket for healthy foods, and another basket for unhealthy foods. We put some junk foods, vegetables and fruits on the table. Then we asked children to separate healthy and unhealthy foods into different boxes. After finishing to separate foods we checked over baskets which foods are in healthy box and which foods

are in unhealthy box. At the end of the activity we picked all lemons and children made their own lemonade. Through this activity we aimed at creating awareness on healthy foods.



Experimental Work

3rd Step: In this step we wanted to demonstrate the importance of brushing our teeth through an experimental setup. The class was divided into 4 groups, containing 4 or 5 children in each group. Each group were given 4 jars, 4 eggs, and 4 different types of liquids (coffee, tea, coke, and water). And they put one egg into each jar then poured liquids separately into each jar. We kept waiting few days to observe what will happen if we don't care brushing our teeth.

After one week later each group observed their own experiment and they discussed about how eggshell looks like. Later, each group compared their eggs with other eggs that were in different liquids. Each group were given one tooth brush and toothpaste and asked to brush eggshells with toothpaste. During the experimental process, children observed that the color of teeth (eggshell) was getting darker in some liquids, and in other liquids eggshells were getting softer.



Main Finding or discussion

4th Step: We asked children to compare their results of the experiment. After comparison we asked the pupils:

- What are the similarities between teeth and eggs?
- How it will affect our teeth if we always drink coffee, coke, or tea?
- Why the eggshell inside water did not change its color while others have changed their colors?
- What have you learned about protecting your teeth?

Reflection

During the experimental work:

- Children found chance to learn about healthy and unhealthy foods
- Through experiment they also learned the importance of brushing their teeth
- In addition, children overall learnt that for being healthy not only exercising, eating healthy foods, brushing their teeth but also necessary is continuing these activities in daily routine.

Using in other contexts and age groups

These activities can be easily adapted to different age groups. For example, instead of using real life samples of foods, for higher age groups teachers can use pictures or drawings of these props. Elementary school pupils can be asked to prepare a poster by cutting pictures of unhealthy foods from newspapers and magazines or we can let them to prepare a poster by themselves. Teachers can ask children to use a tooth brush chart to monitor their behavior on a daily basis both at school and home.

References

- Alat, Z., Akgumus, O., & Cavali, D. (2012). Okul öncesi öğretmenlerinin açık hava etkinlikleriyle ilgili düşünce ve tutumları [Outdoor activities: Early childhood teachers' beliefs and practices]. *Mersin Üniversitesi Eğitim Fakültesi Dergisi*, 8(3), 47-62.
- NAEYC (2009). *Developmentally appropriate practice in early childhood programs serving children from birth through age 8*. Retrieved 24 April 2016 from <http://www.naeyc.org/files/naeyc/file/positions/PSDAP.pdf>

Chapter 7.

CASE STUDIES ON EXPERIENTIAL EDUCATION IN PRIMARY SCHOOL

Alphabetical Country Order:

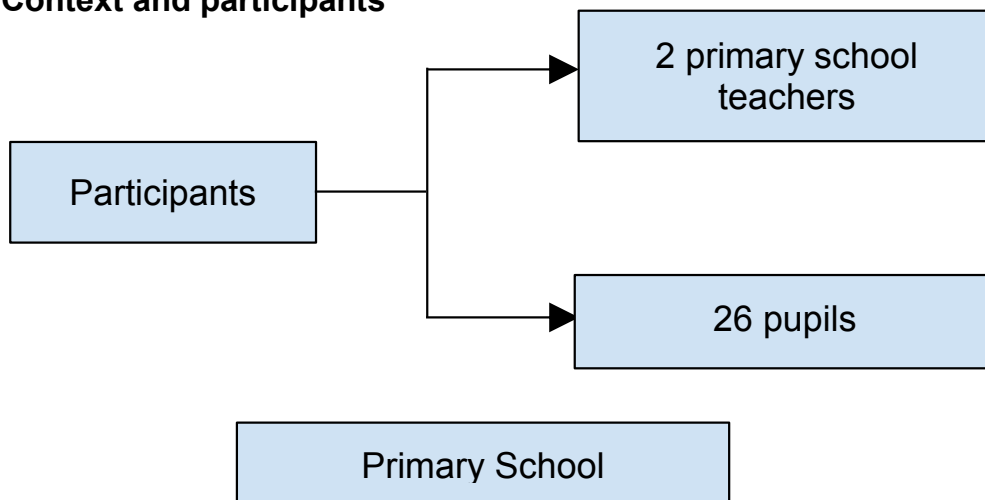
No.	Country	Title of the case-study
Case Study no. 1	Greece	<i>How the “refugee issue” helps children become citizens of the world</i>
Case Study no. 2	Latvia	<i>Three little piglets and how they built their houses</i>
Case Study no. 3	Lithuania	<i>A beautiful world. Noun plurals</i>
Case Study no. 4	Lithuania	<i>Happy geometrical shapes</i>
Case Study no. 5	The Netherlands	<i>From people planet prosperity towards involved citizenship</i>
Case Study no. 6	Portugal	<i>Researching about space, astronauts, planets and stars</i>
Case Study no. 7	Romania	<i>Experiential Learning Project In Primary School: Let’s Count Outdoor!</i>
Case Study no. 8	Romania	<i>Architectural and Environmental Issues As Experiential Learning Activity</i>
Case Study no. 9	Romania	<i>Experiential Learning Project In Primary School: Bean's Diary</i>
Case Study no. 10	Romania	<i>Experiential Learning Project In Primary School: Build A Parachute!</i>
Case Study no. 11	Turkey	<i>Wind power</i>

7.1. HOW THE “REFUGEE ISSUE” HELPS CHILDREN BECOME CITIZENS OF THE WORLD

**Athena ALEXOPOULOU,
Eleftheria BETEINAKI,
Xrysa DERZEKOU,
Moscha KAPSALI,
Marina TZAKOSTA²⁹**

**Department of Preschool Education,
Faculty of Education, University of Crete, Greece**

Context and participants



The topic dealt with was the refugee issue and our aim was to make children sensitive to the problem. The reason we opted for this topic was because, on the one hand, the Greek community has continuously experienced the vast flow of (mostly Syrian) refugees. The country has not been prepared to confront such a deep humanitarian crisis. In addition, the country is considered to cope with its own problems, mostly stemming from its financial problems. On the other hand, we aim to help children coming from countries which do

²⁹ martzak@edc.uoc.gr

not experience the refugee issue to develop empathy towards people in need. We firmly believe that not only does the lack of accurate information not improve peoples' impression about the refugee issue, it also causes extreme negative reactions. We decided to investigate how we can help people in need both at a personal and team level. We overcame the fear that dealing with the refugee issue is a 'difficult' topic due to the emotional load it may cause to children. As it will be shown below, our persistence was rewarded by the children's positive reaction.

The teaching intervention presented here has been applied in one public primary school (N = 26). Two primary school teachers were present as moderators when needed.

Pedagogical approaches

To design the teaching intervention we took the most principles of child-centered teaching, globalization, actuality, supervision and experiential education into consideration. Then, we tried to produce experiential activities following the axes underlying EXPEDUCOM. The theories we opted for in the design of our materials are: the Project approach (cf. Knoll 1996, 1997), constructivism (cf. Jacobsen, Eggen & Kauchak, 2006), multimodality (cf. Kendrick et al. 2006), political education in school (cf. Kalantzis & Cope, 2013), Vygotskian Theory (cf. Vygotsky 1962), multiple intelligences (cf. Gardner 1983, 1993, 1999, 2004, 2006), experiential education (cf. Kolb 197, 1981, 1984). Since such a 'delicate' topic like the 'refugee issue' needs to be dealt with in an infantile and easily accessible way. Therefore, the best way to unfold our ideas was through a child-directed story and a puppetry (doll-theater). In addition, a red-cross volunteer talked to the children, showed them means through which volunteers helped the refugees and interacted with him. The fundamental difference between the application of our teaching intervention between kindergartens and primary schools are the following: a) the psycho-kinetic (physical) activity was not applied in the primary school, b) the linguistic activities primarily were in written form.

Teaching and learning experience (description)

a. Preparations – teaching design

i. Writing the story

We wrote a story which would serve as the main tool for the teaching of the 'refugee issue'. Children's stories maintaining magic elements are attractive to children and pedagogical/ education are disseminated more effectively (cf. Strauss, 1996). The story's heros are fairies which preserve some of the refugees' main characteristics.

ii. Making the puppets

We, then, produced the dolls to be used in the puppetry. Dolls were made of newspapers, plasticine, stucco, glue, plastic colors, hand-knitting threads. Dolls' clothes were also handmade.



After, we created the puppetry scenery and chose the sound effects used during the puppetry.



iii. Interviews

Interviews were not taken individually. We assumed that primary school pupils were already acquainted with the refugee issue and the situation in Greece. Instead, we decided to have a discussion with the whole group of pupils in class.

The questions asked in class were the same as those asked to proeschool individuals and were phrased as follows:

- What do children need in order to grow up properly and be happy?
- What do refugees were on boats? Why do they wear those?
- Do you have any idea how a refugee feels?
- This child is a refugee. What does this mean?

b. Teaching intervention - implementation

Our teaching started with storytelling through the puppetry. Then, we had a 10 minutes discussion with children during whic we made some comprehension/ understanding and consolidation questions. We further asked children to find parallels between the situations of the past and the present. Our story/ puppetry was open-ended; fairies wished there are no refugees in the coming year. Therefore, we asked children to give an end depending on their wishes and hopes regarding the refugee issue. We further asked children to give the story a title (the story was deliberately untitled when we produced it).

The next step of our teaching intervention was the visit the red-cross volunteer paid to the school. The volunteer talked about his experiences while he was showing relevant photos and videos to the children.

Finally, children were asked to draw their feelings and how they would help refugees.



c. *Aims of the designed activities*

- Language
 - *Oral communication.* Children are expected to be able to a) describe, b) to be able to explain and interpret facts
 - *Reading.* Children are expected to be able to understand/ comprehend and retell a story, b) to draw information from written speech.
 - *Writing.* Children are expected to understand the importance of writing as a means of communication and to produce their own written texts.
- Environment. Children are expected to a) develop their self-esteem, b) develop their feelings of love and support towards all beings, c) detect similarities and differences from other people, learn to respect them, be interested in other people's problems and agonies, d) develop their language, communication skills and use of ICT.
- Expression. Children are expected to a) try to interpret human environment through arts, b) express themselves through acting, playing and co-operating.

Findings & discussion - reflection

The pre-teaching interviews showed that there was inaccurate and imperfect information regarding the refugee issue although children had a positive attitude towards people in need in general. During the teaching intervention, were deeply interested in the topic, were troubled regarding the situation of the refugees. Therefore, the post-teaching interviews displayed a better performance regarding children's empathy and knowledge as well as their language development. There seems to be some differentiation between younger and older children; in other words, the older the preschooler the more they focus on the emotional state of the refugees.

Parents reacted positively regarding our teaching methodology and the materials we used in it.

Using in other contexts and age groups

The case study presented here was based on the teaching intervention initially designed for a preschool class. However, our teaching was modified so that it could be applied in all primary school classes.

References

Books

- Cope, B. & Kalantzis, M. (2013). Towards a new learning: The Scholar social knowledge workspace, in theory and in practice. *E-Learning and Digital Media* 10, 332-356.
- Gardner, H. (1993). Multiple intelligences: The theory in practice. Basic Books.

- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*, Basic Books.
- Gardner, H. (1999). *Intelligence reframed: Multiple intelligences for the 21st Century*. Basic Books.
- Gardner, H. (2004). *Changing Minds: The art and science of changing our own and other people's minds*. Harvard Business School Press.
- Gardner, H. (2006). *Multiple Intelligences: New Horizons in Theory and Practice*. Basic Books.
- Jacobsen, D., Eggen, P., & Kauchak, D. (2006). *Methods for teaching: Promotion student learning in K-12 classrooms*. Pearson.
- Kendrick, M., Jones, S., Mutonyi, H., Norton, b. (2006). Multimodality and English education in Ugandan schools. *English Studies in Africa* 49.1, 95-114.
- Knoll, M. (1996). Faking a dissertation: Ellsworth Collings, William H. Kilpatrick and the "project curriculum". *Journal of Curriculum Studies* 28, no. 2, pp. 193-222.
- Knoll, M. (1997). The Project Method: Its Vocational Education Origin and International Development. *Journal of Industrial Teacher Education* 34, 59-80.
- Kolb, D. A. (1976). *The Learning style inventory: Technical manual*. McBer & Co, Boston, MA.
- Kolb, D. A. (1981). Learning styles and disciplinary differences. *The modern American college*, 232-255.
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development* (Vol. 1). Englewood Cliffs, NJ: Prentice-Hall.
- Strauss, S. (1996). *The Passionate Fact: Storytelling in Natural History and Cultural Interpretation*. Golden, CO: North American Press.
- Vygotsky, L.S. (1962). *Thought and Language*. Cambridge, MA: MIT Press.

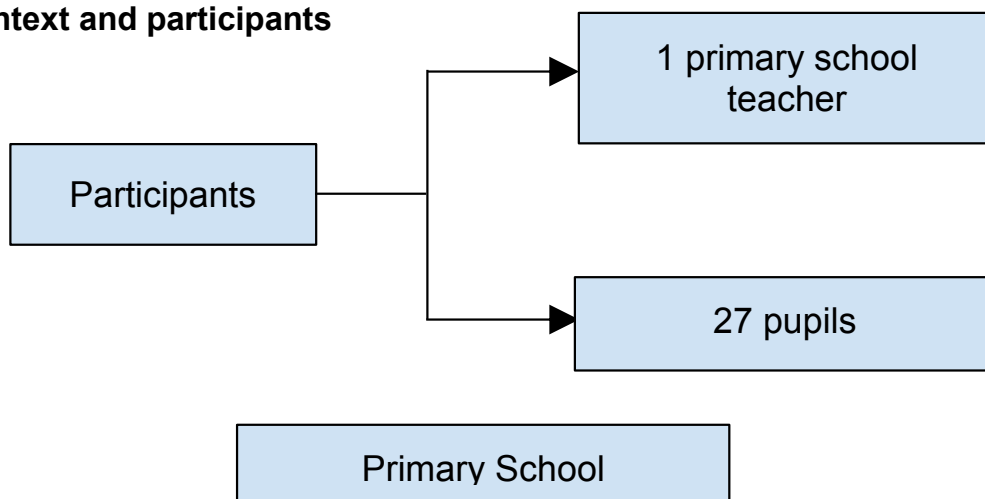
E-references

- https://www.unhcr.gr/fileadmin/Greece/Extras/education_symbiosis/Symbiosis_project_manual_final.pdf
- http://accesstomedia.org/wp-content/uploads/Documents/youthMADE_PerfectImmigrant_lesson.pdf
- <http://www.pi-schools.gr/download/publications/epitheorisi/teyxos6/deloudi.PDF>
- http://www.i-red.eu/resources/projects-files/scedio_drasis-eisagogi-viomatiki_mathisi.pdf
- <https://refugeesgr.wordpress.com/2016/01/26/%CE%BC%CE%B9%CE%B1-%CE%BC%CE%AD%CF%81%CE%B1-%CF%83%CF%84%CE%BF%CE%BD-%CE%B5%CE%BB%CE%B1%CE%B9%CF%8E%CE%BD%CE%B1/>
- https://www.google.gr/search?q=%CF%80%CF%81%CE%BF%CF%83%CF%86%CF%85%CE%B3%CE%B9%CE%B1+%CF%80%CE%B9%CE%BD%CE%B1%CE%BA%CE%B5%CF%82&espv=2&biw=1366&bih=643&source=lnms&tbn=isch&sa=X&ved=0ahUKEwiNjO2-wLXJAhUBSBQKHUpPCVgQ_AUIBigB#tbn=isch&q=refugees+paintings
- http://www.lifo.gr/articles/society_articles/85362

7.2. THREE LITTLE PIGLETS AND HOW THEY BUILT THEIR HOUSES

Marija TOLPEŽŅIKOVA³⁰,
Dace BRINKA³¹,
Daniela Anda POSTŅIKOVA³²,
Anete PLŪME³³,
Riga Teacher Training and
Educational Management Academy, Latvia

Context and participants



Pedagogical approaches

Many educators (J.-J. Rousseau, C. Rogers, M. Montessori) emphasize the idea that children learn better by doing. That's why the teacher will tell children a well-known story about the wolf and little piglets and through the practical experience they will go through house

³⁰ mtolpeznikova@gmail.com

³¹ dace.brinka@gmail.com

³² anda.postnikova@gmail.com

³³ anjeeet2@gmail.com

building steps and decide which house will be the best – which will be more stable in wind and rain.

David A. Kolb considers: "...learning process must be reimposed with the texture and feeling of human experiences shared and interpreted through dialogue with one another." This means that children in classrooms need not only write and read about subject but also work together to explore it, to understand it better and develop communication skills necessary in 21st century.

When children are encouraged to work independently and teacher is working beside children as an assistant not a leader, children have the opportunity to learn from their own experience and mistakes, they feel free to experiment and try new ways how reach the goal. In that way children's critical thinking skills are developed.

Teaching and learning experience (description)

The activity was developed with a group of 7-8 year olds.

The main objective. Observe the differences between materials: straw, branches and Lego, discuss their strength and durability in strong wind and rain.

The secondary objective:

- Improve the quality of communication skills and group cohesion,
- Use research skills to find the best structure of building that can be durable in wind and rain,
- Improve critical thinking skills by observing disadvantages of each house structure.

Children tell the story about 3 piglets by themselves in chosen roles. After this activity children are divided in 5 groups and each group discuss and do research on different styles of buildings from materials they are working with. The materials are previously prepared by teacher with children's help, but children need to find necessary materials independently from all accessible materials in the classroom.

Then children try to build a house from previously learned information and after finishing test its stability and durability. This activity helps children to develop critical thinking skills and encourage learning from their experience.

Planification of the experimental work

1st Step: Storytelling. 4 children are chosen to tell the story of 3 little pigs and a wolf by using stage setup and hand dolls. Children are given text before to prepare and refresh the story in their memory.

2nd Step: Discussion which can help to find the best house building technique.

Experimental Work

3rd Step: Children are divided in 6 groups. Each of two groups work with the same materials, but in different building techniques.

- a. Straws;
- b. Branches;
- c. Legos as a replacement for bricks.

4th Step: Each group explores materials and techniques which are used in house building, decide of the best technique and consults with teacher about their choice in house building. Teacher's task is to organize activity in the following way - groups who work with the same material don't work with the same technique.

- Groups have the opportunity to use trays with soil to stabilize house structure.
- Dry paper towel is placed in each house in order to test water resistance in house.

5th Step: After finishing the houses all children come together. Each team tells about their house and building style. All children observe effects of each house done by hair-dryer and water sprayer.

Main findings or discussion

6th Step: Reflection and discussion which technique of building is better to be stable in extreme wind and rain. What could be done to improve each of the buildings?

Reflection

During the experimental work:

- Children took active part in learning process by doing individual research in groups and information selection for necessary materials;
- Children improved communication skills by working in groups to reach one goal;
- Teacher was successful mediator and offered advice to groups, but did not involve in experiential process by letting children to be more involved in self-learning process;
- In conclusion children developed new ideas how to improve the house structures and developed their critical and practical learning skills.

Using in other contexts and age groups

This storytelling situation can be successfully used in different age groups. It is necessary to know children's age and cognitive skills level. During experiential learning teacher more and more takes place as advisor and observer.

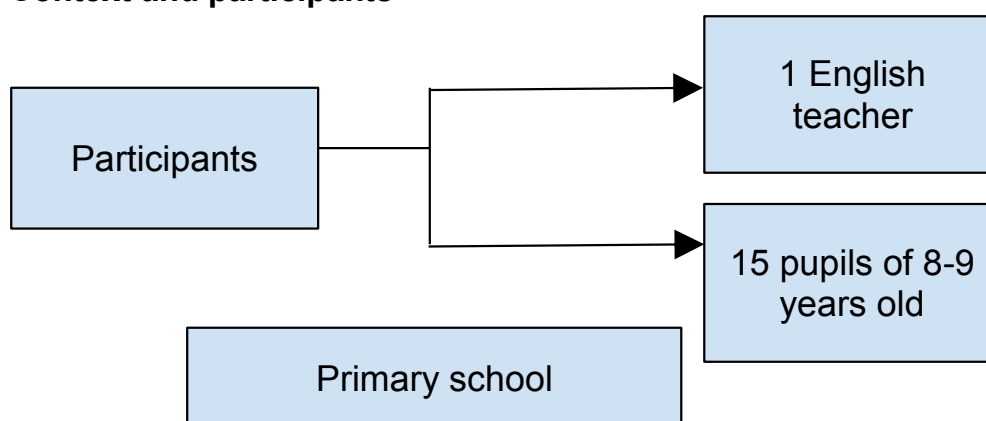
References

- Bullard, J. (2014). *Creating Environments for Learning: Birth to age Eight*. 2 nd ed. Upper Saddle River, NJ: Pearson.
- Kolb, D., A., (2014) *Experiential Learning: Experience as the Source of Learning and Development*. USA: Pearson Education, 18.pp.
- Rogers, C. & Freiberg, J.H. (1994) *Freedom to Learn*. New York: Merrill.
- <http://www.science-sparks.com/2015/07/24/three-little-pig-houses/>

7.3. A BEAUTIFUL WORLD. NOUN PLURALS

Neringa MARCINKEVIČIENĖ³⁴
Aušra BURBIENĖ³⁵
Lithuania

Context and participants



Pedagogical approaches

In the 21st century education beside the main aim of foreign language teaching – to foster an understanding of and to encourage a respective attitude towards people of other cultures and languages, with another way of seeing the world – should be one more added – to raise the language acquisition to such an extent that it would develop in children the confidence and competence to communicate effectively in foreign language (namely English) in a world-wide

³⁴ saulyte676@gmail.com

³⁵ ausra.burbiene@gmail.com

context as well as understanding and processing information from a wide range of sources (digital ones especially). The latter competence undoubtedly leads to a social competence of becoming a worthy and valuable member of world citizenship.

English language learning in a primary school is broadly experiential and contextual and increasingly through analysis becomes more conscious. The child has to be and is immersed in the orality of the language within the contexts of the lesson, most of which are conducted in English. A wide range of language activities – verbal exchanges (greetings, question and answers to everyday situations), speech exercises (reciting verses and poems, counting rhymes, skipping chants, singing and playing games), reading, writing, listening, discussion of grammar points, doing project works – engage children and carry them in the stream of the language.

Teaching and learning experience (description)

The educational process was developed with fifteen third-formers (age 8-9) during the period of 6 lessons (2 weeks: 3 lessons per week).

The 21st century education requires from the teacher to be competent in creating the teaching content innovatively. The following description is an example how one may teach noun plurals making through the experience of children themselves and make them to apply their critical thinking skills as well as to encourage their creativity.

It should be stated that grammar teaching/learning shouldn't take longer than 20-25 minutes of the lesson. The rest time of the lesson children should be provided with other kinds of activities on phonics and vocabulary.

Planing of the teaching/learning process

1st Step. Going into the new grammar topic. Teacher may start the lesson from showing the children a short video on Youtube – a playful song on making noun plurals with the ending –s (Learn Singular and Plural Talking Flashcards). The playful mood and the simplicity of words make children join singing alongside the video. This action should be encouraged by the teacher her/him singing together. Then teacher asks what was the song about. As children learnt the main rule of plural in the second form, so their answer comes immediately.

2nd Step. Getting acquainted with other rules of plural forming. Now teacher explains children that there are more ways and rules of making plurals and they are going to learn them all. They are going to watch short videos on each rule and the earlier selected classmates are going to explain them in their own words in their native language.

P.S. In order to make the process of learning plurals experiential teacher asked 4 children, highly competent at English, to prepare short projects on A4 format sheets of paper, explaining the rules of plural making, and assigned them one rule each.

After the videos are watched and the selected pupils have explained them, teacher asks children to name the four rules of plural making. Here is their answer: a) plural ending with –es, b) plural ending with –ies, c) plural ending with –ves, d) irregular plurals. At this point of the lesson children are set homework: to choose one rule of plural making and prepare a short project, explaining the rule. Here come some examples:



3rd Step. Finding the noun plural forms in the context. The lesson next day starts from the exhibition of children's works and repetition of noun plurals making rules. Then pupils are distributed with the sheets of paper each with the text "A Beautiful World". The text is not unfamiliar to children. They read it much earlier in their class books, when they were learning the word items of fruit and vegetables. The latter variant of the text is expanded and adapted by the teacher herself with the aim of teaching plural nouns and new words from different word families: fruit, vegetables, animals and people. At first, teacher reads the text aloud for two reasons: in order teach children proper intonation styles and help them understand the text from listening.

Then pupils read the text by themselves and have to find all nouns in plural and fill them in the form. For this work children have to find a partner and work in pairs. Teacher warns children that there is a “word cheater” in the text, which does not have a plural form, because it is uncountable. This “word cheater” makes a good pretext to talk with children about noun countability some other lesson.

A BEAUTIFUL WORLD

One sunny morning a very little but very hungry caterpillar comes out of an egg and looks around. He sees a beautiful **red** butterfly. “Oh, I like red. I want to be a red butterfly.” says the caterpillar. “You must eat a lot of red **cherries, strawberries and radishes.**” says the red butterfly.

All day the caterpillar eats red **cherries, strawberries and radishes,** but in the morning he is still a caterpillar. Then he looks around and sees a beautiful **orange** butterfly. “Oh, I like orange. I want to be an orange butterfly.” says the caterpillar. “You must eat a lot of orange **carrots, peaches and oranges.**” says the orange butterfly.

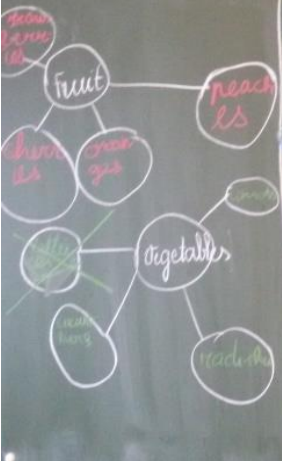
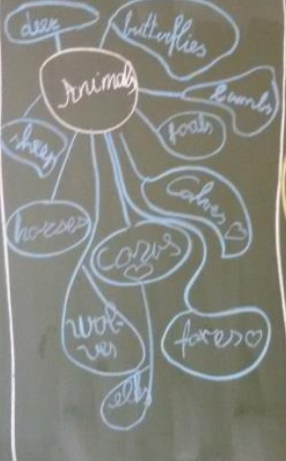

All day the caterpillar eats orange **carrots, peaches and oranges,** but in the morning he is still a caterpillar. He looks around and sees a beautiful **green** butterfly. “Oh, I like green. I want to be a green butterfly.” says the caterpillar. “You must eat a lot of green **lettuce, cucumbers and leaves.**” says the green butterfly.

All day the caterpillar eats green **lettuce, cucumbers and leaves,** but in the morning he is still a caterpillar. Then he eats a lot of other fruit and vegetables. But he is still a caterpillar. “I am very tired. I need to sleep.” says the caterpillar and goes inside of his house. He stays there for two weeks.

When he comes out he is a very beautiful butterfly. He looks around and sees other red, orange, green and yellow butterflies. He flies with them to the field. He sees there horses and foals, cows and calves, sheep and lambs.

Then he flies to the forest. He sees there wolves and foxes, deer and elks.

At last he flies to the town. He sees there men and women, babies and children. He sees a beautiful world. But he is so sad...because the life of a butterfly is so short.

4th Step. Discussion about word families. The next lesson children check their task with the help of the slide prepared by the teacher. Then the teacher starts a discussion about word families. Children explain what are word families themselves, and that there are words from four word families in the text: fruit, vegetables, animals and people. By the way, words from different families are highlighted in different colours in the text. Children have to work in groups and write plural forms in 5 groups according to the word family (the fifth group of words is all the other plurals) and then create a “word map” on the board.

5th Step. Strengthening of knowledge. In the next lessons children get all kinds of tasks strengthening their knowledge on making noun plurals. For example, writing nouns in plural from the text “A Beautiful World” according to their plural ending in five groups: nouns with –s, nouns with –es, nouns with –ies, nouns with –ves and irregular plural forms. Or completing crossword puzzles with vocabulary words in plural and creating such crosswords by themselves. Or doing the translation of the text “A Beautiful World” into the native language. Doing a translation is not an unuseful task. It fosters pupils to look for and perceive the syntactical and grammatical structures common to the two languages or find the counterparts of different ones. Children may be asked to illustrate the text. Such task creates a situation of developing children’s imagination and creativity.



Reflection

Main Findings:

1. Children themselves found this way of learning grammar the most interesting and playful and the easiest one. They were very active, joyful and focused in the process.

2. The learning process was child-centered and the teacher played an advisor's role.
3. The teacher managed to create such teaching context, which made pupils to develop their higher order thinking skills, ICT competence, creativity, ability to work alone or with a friend or in a group as well as the linguistic intelligence.

Using in other contexts and age groups

Such way of teaching can be successful in many other contexts (for example, teaching other grammar topics) and in different age groups. When working with older pupils the competent and creative teacher has to be able to adjust the teaching context and kinds of tasks to the age peculiarities and cognitive skills level of the pupils.

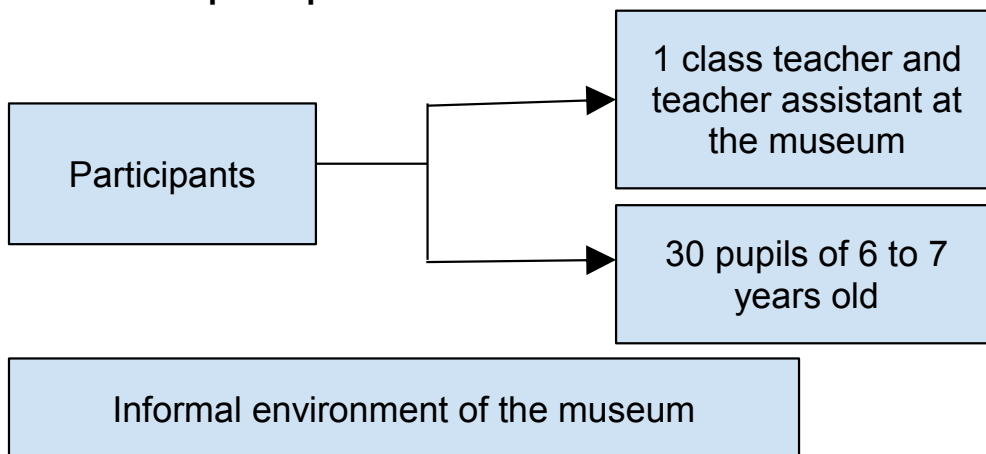
References

6. *The Educational Tasks and Content of the Steiner Waldorf Curriculum* ed. by Martyn Rawson and Tobias Richter, Waldorf Resource Books No.4, 2000.
7. *Lyderių forumo "Sėkmės istorijos" pranešimų rinkinys*, Kauno pedagogų kvalifikacijos centras, 2015.

7.4. HAPPY GEOMETRICAL SHAPES

**Gitana RACKAUSKIENE³⁶,
Neringa MARCINKEVIČIENĖ³⁷,
Aušra BURBIENĖ³⁸,
Lithuania**

Context and participants



Pedagogical approaches

Kaunas Pranas Mašiotas primary school distinguishes itself for a great amount of educational processes taking place in different informal learning environments. The school community believes that the main requirement for modern education is to combine Art, Science and Religion. Art, Science and Religion are three pillars holding human civilization and especially important for educating young

³⁶ tagitara@gmail.com

³⁷ saulyte676@gmail.com

³⁸ ausra.burbiene@gmail.com

children. Every human being has got three tendencies: wish to understand any science phenomenon, inclination for doing art and need to recall and understand forces that created the world and human being. The best way to help children to perceive and understand Art, Science and Religion is to lead them into the real world, where they can obtain the real experiences of any phenomenon.

Children of today are increasingly active, hyperactive and less subordinate, however, very competent at processing the less information quicker. The mobile teaching/learning may benefit from these peculiarities of children. Learning for example maths in an informal environment – a school yard or a museum – helps children to understand, what maths, such a “dry” science, is for, what value does it bring and where it can be applied in reality. Learning maths through games and common creative work fosters children to develop their skills of critical thinking.

Teaching and learning experience

The activity was developed with 30 first-formers (age 6-7). It was the first time when children were learning about geometrical figures. They had to be able to name different figures, count them and make another figure out of them.

Planning of the teaching/learning process

1st Step. *Introductory part.* Teacher started a discussion to find out whether the pupils have any knowledge about the geometrical shapes and what geometrical items can they already name.



2nd Step. Theoretical part. With the help of ICT teacher introduced the geometrical figures, starting from the simple ones, and proceeded to the complex ones. Then teacher showed a lot of slides with the various examples of geometrical forms. Pupils had to recognize and name them.



3rd Step. Practical part. Pupils got an individual task to make a picture using the figures given by the teacher. Then they had to count how many and what figures did they use. Then pupils exchanged their projects and checked the task and the answers.



4th Step. Concluding part. Children presented their works and then followed a reflection of the lesson.



Reflection

Main Findings:

- Children were excited about doing art through geometrical shapes. The Maths lesson was successfully combined with the Art lesson.
- The task was successfully selected, because all the children (with different learning skills) managed to accomplish it.

- It is very important to let children to evaluate their works themselves. Children were very happy presenting their pieces of creative work.
- Learning with unusual means of work (in this case – little paper geometrical forms, in other cases it may be different household devices and things) stimulates children's interest in what they are doing, develops their creativity, skills of discovering, observing, analyzing, synthesizing and drawing conclusions.

Using in another contexts and age groups

Such way of teaching may be easily transferable in other contexts (for example, doing drawings and countings on the tiles of the school yard) and with older children. Taking into account learning skills and age peculiarities of the children a creative teacher has to manage thinking of appropriate interesting tasks.

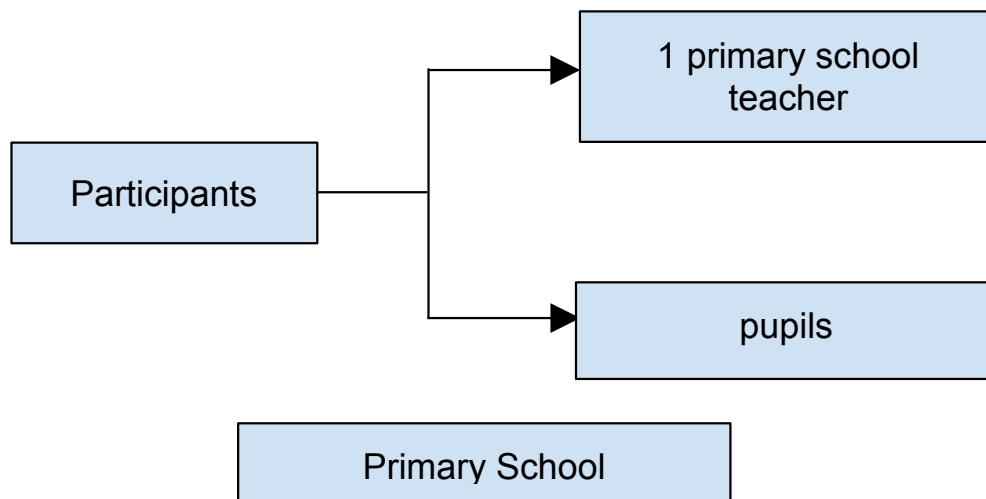
References

- *The Educational Tasks and Content of the Steiner Waldorf Curriculum* ed. by Martyn Rawson and Tobias Richter, Waldorf Resource Books No.4, 2000.
- *Lyderių forumo "Sėkmės istorijos" pranešimų rinkinys*, Kauno pedagogų kvalifikacijos centras, 2015.
- *Waldorf Education: exhibition catalogue, on occasion of the 44th session of the International Conference on Education of UNESCO in Geneva*, Freunde der Erziehungskunst Rudolf Steiners e.V., Stuttgart, 1994.

7.5. FROM PEOPLE PLANET PROSPERITY TOWARDS INVOLVED CITIZENSHIP

Gerben de VRIES³⁹
Marnix Academie, The Netherlands

Context and participants



An activity to do in our outside school, focussing on thinking about the future, stepwise, supported by 21st century skills, working towards the development of 'involved citizenship'.

By Gerben de Vries, Marnix Academie, Utrecht, 20-4-2016

This lesson comes from a book '32 lessen voor de toekomst' (32 lessons for the future), published in November 2015 in The Netherlands. Before publishing the lesson is tried out in primary schools (designing the school yard) and teacher training colleges (improving sustainability). An overview with pictures of these lessons is added to the lesson.

³⁹ g.devries@hsmarnix.nl

Intro and aims:

Every neighbourhood, area, society differs from another. This is what you notice when, after a long journey, you step out of your boat, bus or plane: 'it's a different world'. And you notice this when you visit your friend, relatives, colleagues: cultures, subcultures differ. In this lesson a plan is offered to look at such a subculture, phenomenon in as structured way. By using the plan you can work with pupils, students on thinking about positive change for the future. In the plan you will work in an integrative way on realizing several aims that are compulsory in Dutch primary education:

- language: pupils learn how to evaluate information in dialogue;
- society: pupils learn how to take care of the environment;
- geography: pupils learn how to compare their surrounding area with areas elsewhere.

Other aims that pupils will work on are:

- pupils are able explore from a multiperspective view, using people, planet and prosperity as viewpoints;
- pupils use dialogue as a way to exchange opinions towards shared solutions;
- pupils think in a structural way about a desired future;
- pupils use 21st century skills in learning processes;
- pupils experience the functionality of involved citizenship.

The teacher uses pedagogical strategies from different disciplines:

- geography;
- sustainable development;
- multiperspectivity;
- 21st century skills, such as cooperative learning, critical thinking and ict literacy.

The lesson plan:

Pupils are challenged to think about the future of the neighbourhood, schoolyard or such. It is important to make this as meaningful as possible. For instance: *'the school board in thinking about changing the school yard; we would like to have your opinions about what should be changed. The headmaster will come later this afternoon to listen to your ideas to take them with her into the school board's meetings'*.

Pupils will do research on the spot (outdoors). They take pictures of situations they would like to change. That can be off all sorts: dog's poo, inappropriate playgrounds, places to sit, fruit trees, school's vegetable gardens, too many stone objects that hurt etc.

This research is done in two rounds. Firstly pupils look individually what subjects might be suitable. These are written down (lpad or smart phone use). That small groups, three to four, are made. In small groups one subject per pupil is chosen by arguments. A picture is

made of each of these chosen subjects (Ipad or smartphone use). The picture is sent to the teacher.

In the classroom, in the small groups, a dialogue takes place on each picture about possible developments ('what can be improves in the future?') prof the tripleP (people, planet, prosperity) perspectives. The results of this dialogue are written down.

As an example: because of all parking places there is less possibility for a big playground. Possible solution: a parking garage at a walking distance from the school, for all cars in the neighbourhood.

- impact on people: safe playing for children, drivers have to walk a certain distance;
- impact on planet: more space for green and playgrounds, big building somewhere in the neighbourhood;
- impact from prosperity: who will pay for the garage?

After the brainstorm pupils talk about argumentations: what are real, what not? In the above example the financial challenge will be heavy: a garage is not an option. Pupils have to come up with alternatives, that can be dealt with in the same way.

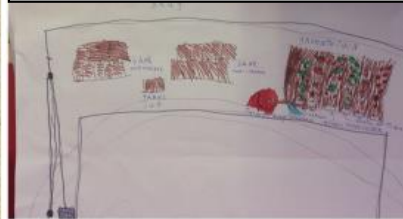
In the end the group have to come up with an underpinned choice, based on consensus. That 'consensus' makes it difficult: some pupils have to give in...

The result will be presented and discussed by the class, in a plenary session. It is very important that the teacher does this from a positive attitude: there is no right or wrong, there is an argumentation that leads to the chosen solution. In the discussion the focus will be on the outcome (what solution is chosen?) and on the process (how did you get there, how easy or difficult was sit, how did you deal with different viewpoints and opinions, was everybody involved and respected?).

This way of working is according the didactical model of learning for sustainable development (De Vries & De Hamer 2009). It is a generic model: it can be used adaptively in all sorts of pedagogical situations, always working towards visons about future developments: the future of a region, the schoolyard, the EU, becoming vegetarians etc. It is always about multiperspectivity, scenario thinking, choices based on values: what matters for the future?



Lesson try out: design a



Marnix Academie
g.devries@marnix.nl

DUURZAME
PABO



Lesson try out: how to clean the canteen, Yfke (8y) and Mare (6y)



Why do students of a teacher training college leave behind trash on the table?

Why don't they clean it up? And what to do about it?

Yfke (8 years old) and Mare (6 years old): we should make it fun to clean the table, like in the Adventure Park near by: a giant that says: 'trash here, trash here....' and 'thank you' when you put trash in his mouth....

People: it is fun.

Money: ask parents to make it; costs wood, paint and some sensors.

Environment: better cleaning.

Marnix Academie
g.devries@marnix.nl

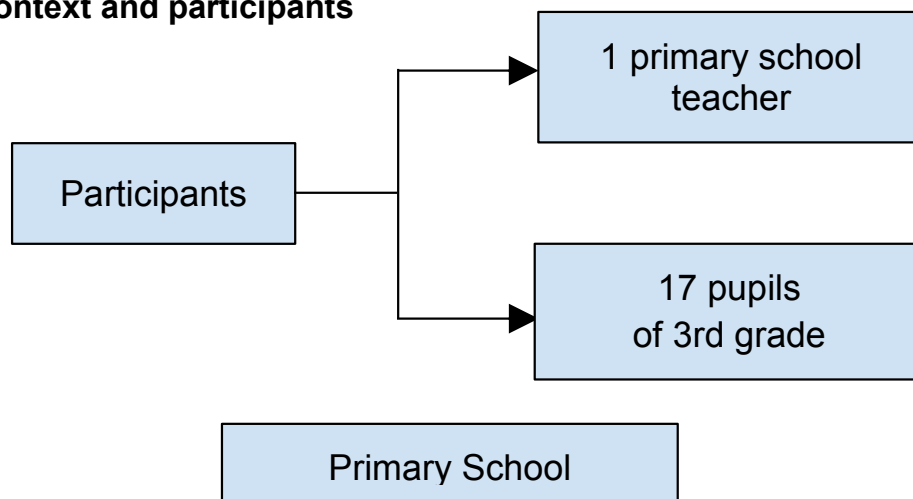
DUURZAME
PABO



7.6. RESEARCHING ABOUT SPACE, ASTRONAUTS, PLANETS AND STARS

**Inês SILVA⁴⁰;
Cristina MESQUITA⁴¹
Polytechnic Institute of Bragança, Portugal**

Context and participants



Pedagogical approaches

The teaching-learning experience described in this case study follows an approach based on inquiries as a base for a problem-solving strategy, involving the use of several procedures. As referred in the perspectives of Dewey (2007) and Bruner (2008, 2015), the inquiry based learning approach emphasizes the participation and responsibility of the child to discover knowledge new to him. This highlights the involvement and the action of children, and also the need to organize it in a clear and sequentially investigational process.

⁴⁰ ines_silva24@hotmail.com

⁴¹ cmmgp@ipb.pt

This approach aspires to the involvement of children in the knowledge discovery, in an authentic learning process.

Teaching and learning experience (description)

The teaching and learning experience was developed in a primary school, in a third grade class. It was designed from a problem that emerged from the curiosity of children, sparked after reading a story. It assumed a holistic and interdisciplinary approach, and the action was planned from the ideas and interests that children revealed about the subject.

Contextualization

We started reading the story "One, two, three, planet n.º 20" (Gomes, 1983). We created, in advance, a suitable environment to narrate the story. We dimmed the lights, closed the shutters, projected stars on the ceiling to create the idea of a night sky. We made an expressive reading of the story, projecting the images on the interactive whiteboard. The students were engaged by the reading. The conversation about the story was a great moment of reflection. Many questions were made by the children, and many doubts emerged. This dialogue created the conditions for the development of the research. The procedure is synthetized in figure 1.

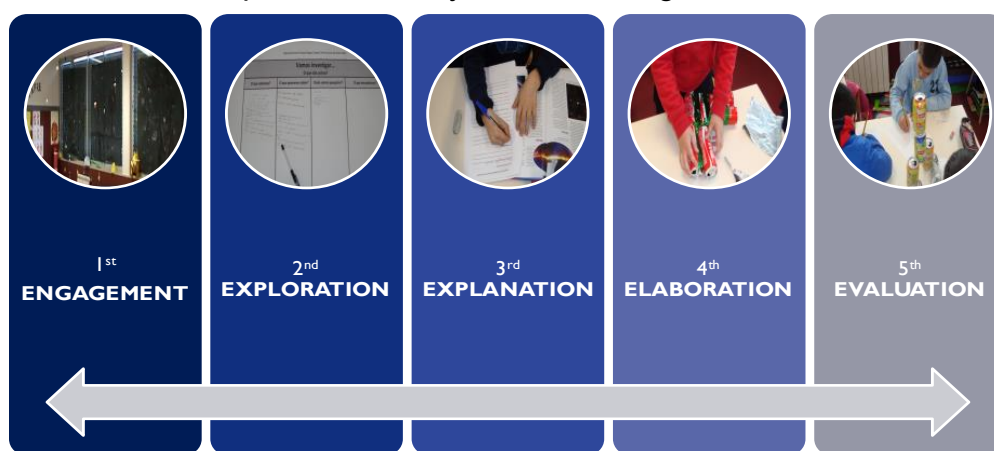


Fig 1. Summary of the teaching-learning experience

1st Step: Research question

The main research questions that arouse were: what are the planets? who can travel in space?

2nd Step: Exploration

Children wanted to find out the answer to the questions they had about the stars. They were motivated and interested in the investigation.

With the intention of knowing the preconceptions of children, to establish the main research questions, we asked each student to answer a questionnaire with questions such as, among others: what is a planet? what are the stars?

The questionnaire was answered individually and without any kind of help, to establishing a reference for the evaluation process and use it to compare the children knowledge on the subject in the final moment.

3rd Step: Explanation

When they completed the questionnaire, we provoked a large group discussion about their ideas about the space, planets and stars. Then, they suggested what they wanted to know.

Each child set his ideas and questions in his diary and on the placard, previously prepared for the registration of the research questions.

Together we agreed that we would find answers to the questions in books on the topic, in textbooks and on the Internet.

On the next day, starting again from the story, the following question emerged: "Who can travel to other planets?". All the children seemed to realize that only the astronauts could do such activity. Because of that, children also wanted to know how a person can become an astronaut.

We gave each child a guideline, with all the questions they have asked. They should research for answers on books, encyclopedias, on the Internet, following a list of given website links.

4th Step: Elaboration

After completing the researched, children began to build a more clear idea about the issues under study. The next challenge was how could they communicate the knowledge they built to their colleagues.

It was decided that each group would prepare a narrative to show to the others what they had learned.

The teacher made the suggestion to create a narrative in a different way. Some children would create astronauts, others would build spacecrafts and others would create space, galaxies or other environments where the story could happen.

We provide waste materials so that they could build the characters (astronauts, aliens, spacecraft and environments).

Once they finished, we formed sub-groups, each consisting of three children: one that built an astronaut, other with the spacecraft and another with the environment. Based on their objects, each of these sub-groups wrote a storytelling, applying the previously knowledge. When they finished, each group presented it to the class.

5th Step: Evaluation

At the end of the week, after the completion of the research, we asked the children to answer a new questionnaire about the subject, in order to check if the conceptions had changed after. The majority of the children had more meaningful ideas about the subject.

Using in other contexts and age groups

Although developing the process described in this paper with a class of the third grade, transferability is possible to other levels of education. The procedures developed in the learning experience that include involvement, problem solving, exploration, inquiry, communication and evaluation, should be encouraged in all levels of education.

The teacher's mediating role and the children's action are aspects that must be considered in the pedagogical interaction in schools.

In this regard, we believe that, with the appropriate adjustment of languages and considering the complexity of the issues and themes, this activity can be developed in different educational environments and age groups.

References

- Bruner, J. S. (2008). *Actos de Significado*. Edições 70.
- Bruner, J. S. (2015). *O Processo da Educação*. Edições 70.
- Dewey, J. (2007). *How We Think*. Digireads.com. Obtido de <http://www.amazon.com/How-We-Think-John-Dewey/dp/1420929976>
- Gomes, M. J. (1983). *Um dois três planeta n.º 20. Um jogo de esconde-esconde espacial*. Lisboa: Moraes.

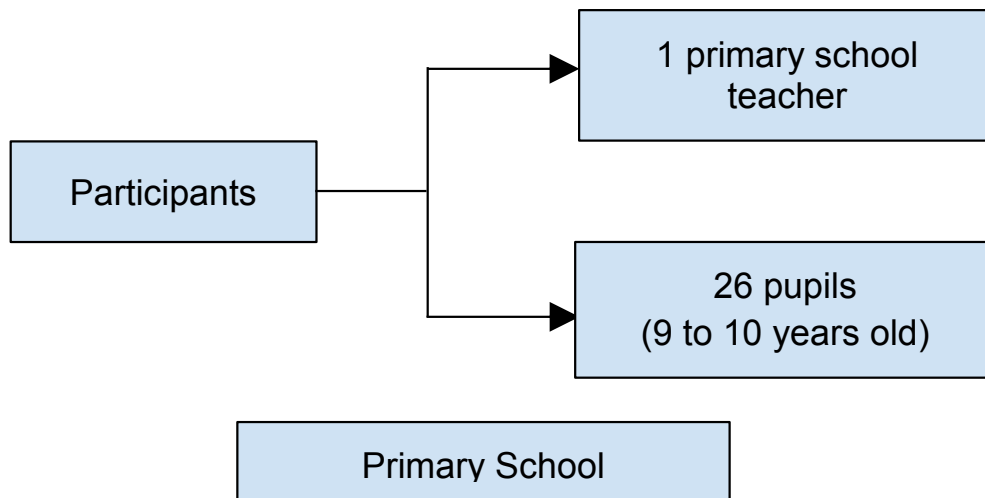
7.7. EXPERIENTIAL LEARNING PROJECT IN PRIMARY SCHOOL: LET'S COUNT OUTDOOR!

Gianina-Ana MASSARI ⁴²,

Liviu CALFA⁴³,

Faculty of Psychology and Education Science,
Alexandru Ioan Cuza University of Iasi, Romania

Context and participants



Pedagogical approaches

The methodology of teaching the natural numbers concept is based on the fact that pupils of primary school are still on the concrete operations phase, learning mainly through intuition and direct manipulation of objects. As we move to the fourth grade of the primary

⁴² gianina.massari@gmail.com

⁴³ liviu_calfa@yahoo.com

school, the gradual lifting of the general and abstract occurs for a better understanding of the reality.

In fourth grade will therefore focus on stressing that the number sequence could be acknowledged and learned by using natural elements or performing mathematical activities in nature (eg, stimulate pupils to learn to read and write big numbers which shows how much the Earth weighs, the distance between Earth and the moon, counting the trees in a park etc.).

Teaching and learning experience (description)

Through this activity we want to show students that math activities can be enjoyable and useful in any context.

Planification of the experimental work

1st step: This activity was designed to be done outdoor of the class because students in fourth grade failed to understand the activities performed in the classroom, especially the concept of a number consisting of two or more classes.

2nd Step: What do we want?

The main objective: Reassessing the knowledge of writing, comparing, ordering, rounding numbers less than or equal to 1 000 000

The secondary objective:

- Discover an encoded message, converting the numbers written in Roman numerals into Arabic;
- Develop the ability to communicate through mathematical activities.



Concret work

Materials: stickers with numbers, nails, drills, tokens, stickers, flip-chart, markers

Procedure: The teacher explains the students that in the area, certain numbers are hidden and that there is one number for each of them. Once they find that number, they will stick it to their clothing and from that moment they represent the number.

The teacher will continue the activity with a sequence of requirements that aim, in fact, assessing if the student is able to operate with numbers.

The sequence of requirements:

- Please sit in ascending order!
- Now, please sit in descending order!
- Number 24 500, which is your predecessor and your successor?
- Number 50 000, which is your predecessor and your successor?

Students are asked to sit in a circle and follow a different set of requirements:

- The lowest odd number written with 4 digits, please take a step forward!
- The largest natural number written with 5 digits, please take a step forward!

Further, the students who previously formed a circle, will be grouped in two columns, one column would represent the even numbers and the other column odd numbers.

In the following set of requirements, we are pursuing the students ability to compare numbers. The numbers are facing each other, there will be a dialogue between two numbers:

The rules are explained and an example is given:

- 1- I am number 27 500 and I'm bigger than you because I have more numbers / I am number 6750 and I am smaller than you because I have less figures;
- 2- I am number 23 320 and I'm bigger than you because I have the hundreds figure bigger / I am number 23 100 and I'm smaller than you because I have the hundreds figure smaller.

Main Finding or discussion

4th Step: During the activity the students were very careful when they had to sit in ascending / descending order, compared with a similar activity that took place in the classroom. It has been shown that harmonizing mathematics with nature increased the interactions' flexibility between student-student, student / teacher.

5th Step: In this activity, students were encouraged to communicate explaining what the rules are on comparing numbers and then decode a message written in Roman numerals.



Reflection

To understand the concept of numbers, it is important for the teacher to appeal to as many effective strategies designed to put student in concrete situations of learning. It is necessary that the student benefits from rich and varied teaching materials, that several analyzers (visual, tactile, auditory) are trained in order to fully understand the concept of the number, as well as using teaching games outdoors, in a different context.

This activity also contributes to the development of the ability to communicate.

Students were excited about it since the environment in which it was done was suitable for this activity.

Please see below some student's opinion on this activity:

„Today's activity was special and I liked it. We worked as a team and we reviewed what we know. You can learn mathematics anywhere” „Well, I liked chasing chips, conversation between numbers and decipher Roman numerals” „I liked math out because it was fun ”, " I-loved work today it was something else, something new", "Outdoor work is more fun because we can play ", "I liked this activity because we have transformed mathematics in a fun game in the park, outdoors.”

Using in other contexts and age groups

This type of activity can be used in grades I-III and also in kindergarten where pupils can operate with lower numbers.

In kindergarten, preschoolers can use leaves, stones, sticks for making crowds so they can learn in a pleasant way the notion of number.

References

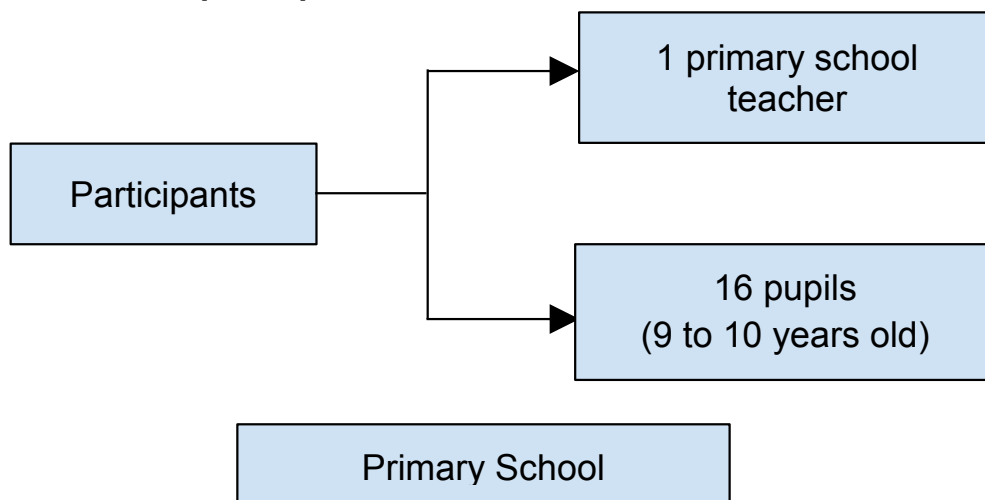
- Priest, Simon, (1986), *Redefining Outdoor Education: A Matter of Many Relationships*, In *Journal of Environmental*;
- Șoitu, L., (2013), *4D în Educație*, Iași: Institutul European.

7.8. ARCHITECTURAL AND ENVIRONMENTAL ISSUES AS EXPERIENTIAL LEARNING ACTIVITY

**Gianina-Ana MASSARI⁴⁴,
Liviu CALFA⁴⁵,**

**Faculty of Psychology and Education Science,
Alexandru Ioan Cuza University of Iasi, Romania**

Context and participants



Pedagogical approaches

The desire for age-specific knowledge must be stimulated in children by encouraging them to always ask questions about the world around us and must be steered by investigative activities and exploration, in order to facilitate the discovery of the surroundings and solutions for protecting themselves in this environment. The direct approach through bodies' properties exploration, examining environmental phenomena and processes, helps the child to take note

⁴⁴ gianina.massari@gmail.com

⁴⁵ liviu_calfa@yahoo.com

of their presence, perceive their qualities, recognize them, and get to explain them in intuitive ways..

Teaching and learning experience (description)

Through this work, we propose that students identify materials used to construct a home, their usefulness and the differences between certain types of materials.

Planification of the experimental work

First step: This activity was done after discussing with the students during Science class about protection norms in case of fire and earthquake, presenting the changes that have occurred since the appearance of mankind until now in terms of constructing buildings that provide safety.

2nd Step: What do we want?

The main objective: Enhancing their knowledge about specific type of housing materials and their processing methods since the beginning of mankind until today.

The secondary objective: Acknowledging other types of construction that is made with the same materials and housing evolution from the man's appearance until now; Improving team working skills.



Experimental Work

Materials: Clay, brick, stone, wood, water, hammer, nails, sand, water, gloves, straw.

Procedure: Each team must build a miniature house from: clay, brick, wood and stone. These means of construction represent, in fact, the housing evolution from man's appearance and display the way man has taken everything necessary for his survival from nature and processed it to his best use.

Each group picks a note and finds out what kind of house has to build. It should be explained that groups must choose the right

materials for construction, and the team leader must assign the tasks so that each of them participates in the activity.

The rules of labor protection should be explained so that everybody understands them.

The teams begin to realize the works under the guidance of the teacher. After building houses, each team must specify what materials were used for the construction, the risks of disaster based on each dwelling and where we can procure construction materials.

Main Finding or discussion

4th Step: After the activity, students have realized that the world is in constant change, your safety should be put first and we must find as many solutions as possible so the surroundings are comfortable. The discussions on the activity focused more on building a brick house. Students have concluded that it is more suitable for humans than the others and it is also safer.

5th Step: In this activity students were encouraged to communicate and interact with each other so the product that needs to be done is properly built.

Reflection

Pupils's curiosity was stimulated through this activity. It was focused on practical matters, so that they can find answers to various questions by investigational approach.

Therefore, the activities with investigational character contribute to developing exploring and problem solving skills..

Using in other contexts and age groups

In primary education, visits to museums of history can be organized in order to better observe human evolution, as well as workshops for students for processing certain materials and crafting objects.

In preschool education workshops can be organized using materials such as toothpicks for structural elements, food for structural nodes (cut fruit, gummy candy, etc.), workshops where children must build a house of an imaginary character using the above tools (there may be challenges like: the resulting structure must be solid (make sure it does not fall) to be self-supporting (be independent) or perhaps to be a hanging structure. The final result is more enjoyable since they can taste their creations.

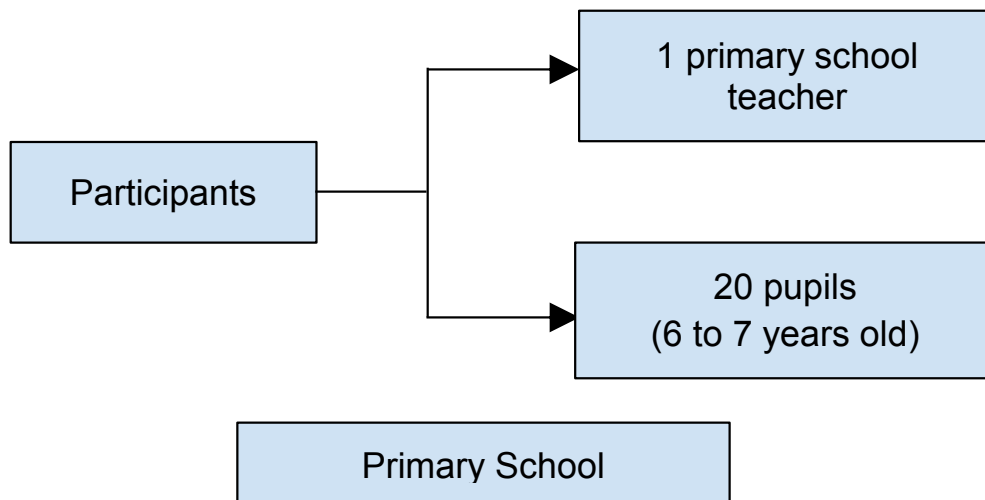
References

- Priest, Simon, (1986), *Redefining Outdoor Education: A Matter of Many Relationships*, In *Journal of Environmental*.
- Șoitu, L., (2013), *4D în Educație*, Iași: Institutul European.

7.9. EXPERIENTIAL LEARNING PROJECT IN PRIMARY SCHOOL: BEAN'S DIARY

Liviu CALFA⁴⁶
Florentina Manuela MIRON⁴⁷,
Faculty of Psychology and Education Science,
Alexandru Ioan Cuza University of Iasi, Romania

Context and participants



Pedagogical approaches

Friendships are extremely important for children in primary school. The ability to socialise with peers, negotiate disagreements and be part of a friendship group is paramount. For children, making and maintaining friendships can be a real challenge. It becomes particularly difficult as children progress through primary school, when

⁴⁶ liviu_calfa@yahoo.com

⁴⁷ mironmanuela@yahoo.com

there needs to be an increased understanding of reciprocity and awareness of motives, thoughts and feelings of others.

In the early stages of primary school, children learn to share their feelings in words, consider the effects of their actions, reflect on and plan what they feel, do and say. All of this requires an appreciation of the emotions and thoughts of other people, and the language to put this into words. There are opportunities in school and in the playground to play and interact through language, which allows children to develop skills in managing their emotions and behaviour appropriately (Massari, 2013). With developed language skills, children can negotiate their roles in play situations, organise activities, clarify their thoughts to others and make it clear when they are unhappy with a situation.

This activity promote critical thinking, the applicability, awakens curiosity for the environment, improve the quality of communication act (Massari, 2014).

Teaching and learning experience (description)

With this activity we want that children observe and understand the importance of following policy in a civilized communication.

Planification of the experimental work

First step: This activity in particular, arose from a situation experienced by children when they didn't know that when we communicate we must respect some important rules: we mustn't yell, we must learn that when someone talk, the others have to listen. So, we want to see how is the pupil behavior against plants, if there are differences between child behavior towards his peers and child behavior towards plants.

2nd Step: What do we want?

The main objective: to improve the quality of communication act and group cohesion;

The secondary objective: a plant evolutionary stages, conscientiousness and responsibility





Experimental Work

Materials: beans , three bowls, ground, water

Procedure: Pupils have made three bean sprouts. Added of earth covering all grains in each bowl and placed them at the window. Were sprayed with water every day with " different words " beans from the first bowl were nice words said , the second , were at odds, and with the third did not speak at all. It repeated these steps for 10 days, during which the pupils wrote in the " diary beans " what happened in each bowl every day.

Main Finding or discussion

4th Step: The discussion of the observed data was focused on the difference between those three bowls.

Almost all children attention was focused on the first bowl. They didn't want to sprayed with water the second and the third bowl because they just wanted to take care of the first bowl. Five of them wanted to sprayed with water only the second bowl. When I asked them why, they said they did not know nice words for the first bowl.



5th Step: In this activity the children were encouraged to express their feelings to a plant, through words, following the pupils to realize the importance of the communication, socialization.

Reflection

Learning by discovery as a method has been instrumental in this experiment.

Through these activities the pupils have noticed how a plant grows respecting all the necessary conditions (water, air , light , earth , warmth, harmony , beautiful words), and following this activity, pupils have realized that to develop properly, people needs all these elements.

It has been ensured that in this experiment pupils has to be responsible, it was observed their involvement in this activity.

This experiment was an effective one because the knowledge and skills that they form are lasting.

Using in other contexts and age groups

The practical activities are those who put the pupils in new situations of learning.

To be more accountable, pupils can receive various tasks. For example they can investigate the burgeoning period of a tree until the fruit formation.

This activity can be achieved in kindergarten and middle school, tasks and difficulty of the experiment is under age.

References

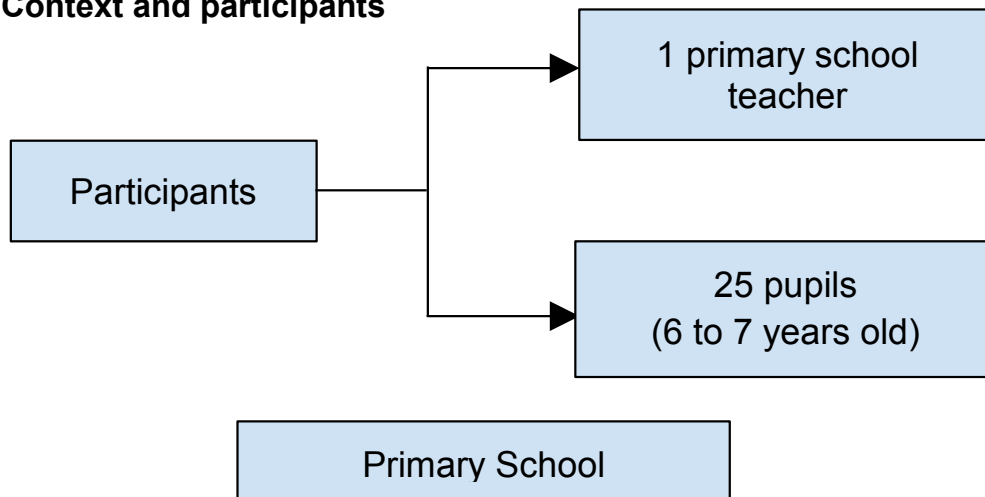
- Massari, G. (2014). *Theory and Methodology of Instruction*, pp. 3-97, in Manual for Pedagogy of Preschool and Primary School Education, Iași: Alexandru Ioan Cuza University Publishing House.
- Massari, G. (2013). Best practices in outdoor education, in *4D in Education*, Iași: European Institute.

7.10. EXPERIENTIAL LEARNING PROJECT IN PRIMARY SCHOOL: BUILD A PARACHUTE!

**Florentina Manuela MIRON⁴⁸,
Gabriela CERCELARIU⁴⁹**

**Faculty of Psychology and Education Science,
Alexandru Ioan Cuza University of Iasi, Romania**

Context and participants



Pedagogical approaches

Experimental scientific activities, both in primary education and in preschool help children acquire new knowledge but also to put into practice the knowledge acquired previously, help them developing their communication and social skills, learning how to follow rules, to express their opinion but also to listen to their team members' points of view.

These things are not only important for the school and its activities but also for the everyday life of the pupil.

⁴⁸ mironmanuela@yahoo.com

⁴⁹ cercelariu.gabriela@yahoo.com

Experiential learning enables them to use skills they learned in kindergarten namely: observation, comparison, handicrafts, description and interpretation (Massari, 2014)..

This experiment refers to one of the laws of physics, namely: the more an object has a larger surface area in contact with air, the harder the object travels by air.

It is important for students to know this in order to explain various phenomena of the world surrounding them (Massari, 2013).

Teaching and learning experience (description)

This activity was conducted with a group of 6 to 7 years old pupils. Through this activity we want the children to observe and compare the speed with which a parachute made by them descends to the ground, depending on its size.

Planning the experimental work

1st Step: This experiment was made after the teacher was asked various questions about skydiving, how do people fly and how the paratroopers reach the Earth without being hurt.

In order to use knowledge that the children previously acquired, the teacher asked them about the speed with which an object falls when you drop it, which objects fall faster? The light or heavy ones? Then the teacher dropped objects with different weights and sizes to see if the children were right.

2nd Step: The next step in the experimental process was to complete the plan.

- *What will we observe?* (We will observe which parachute descends faster. – Maria)
- *What are we going to change?* (We will change the size of the plastic octagon that makes up the "canvas" of the parachute – Alexandra)
- *What we can't change?* (We cannot change the base weight of the parachute - the pin. – Adina)
- Neither can we change the size of the cord.

Experimental Work

3rd Step: Each team receives 3 nylon bags of different sizes: large, medium and small. Cut a square portion of them, and then cut it over in order to obtain an octagon. Pierce the bag easily with a nail near the 8 angles, to get symmetrical holes on the bag.

Children then insert a cord in each hole and connect the other ends of the cords together in a tight knot and then push the nail through the knot to have a parachute weight.

Each team then tests the speed of the three parachutes descent and notice that the bigger the size of the plastic parachute, the slower the descent.

Main Finding or discussion

4th Step: Discussions on the experiment focused on the difference in speed of each parachute dropping. Among conclusion I would mention:

- The smallest parachute reached the ground the fastest – Ioana
- The largest parachute reached the ground the hardest – Ana
- The bigger the parachute, the safer the paratrooper. - Daria

5th Step: The activity ends with the systematization of discoveries, where children are encouraged to express their conclusions and the teacher translates with appropriated language the results.

Reflection

During the experimental work:

- Was valued the learning by discovery and adopted different practices, focusing on cooperation and respect for the different interests of children;
- Educational opportunities that favored cooperative learning and the involvement of children were created, contributing to the success and learning process of all;
- The teacher was an active mediator of learning and development of children being alert to the learning processes and trying to understand the conceptions of children to organize the experimental work.
- The children were encouraged to interact with the world around them, so that their learning could be meaningful to them;

The child was valued as competent, having the opportunity to expand their knowledge about subjects of their interest.

Using in other contexts and age groups

Even if the experiment was done in the preparatory class that does not mean it cannot be used and useful in kindergarten or secondary school. Given that the procedures used such as obtaining new knowledge but also putting into practice the knowledge acquired previously, developing communication and skills, following rules, expressing opinions but also listening to the views of others team

members are important for all students, this experiment should be done in primary and secondary education as well.

Teacher involvement in mediating the discussions had an important role and it should be highly considered in pedagogical interaction.

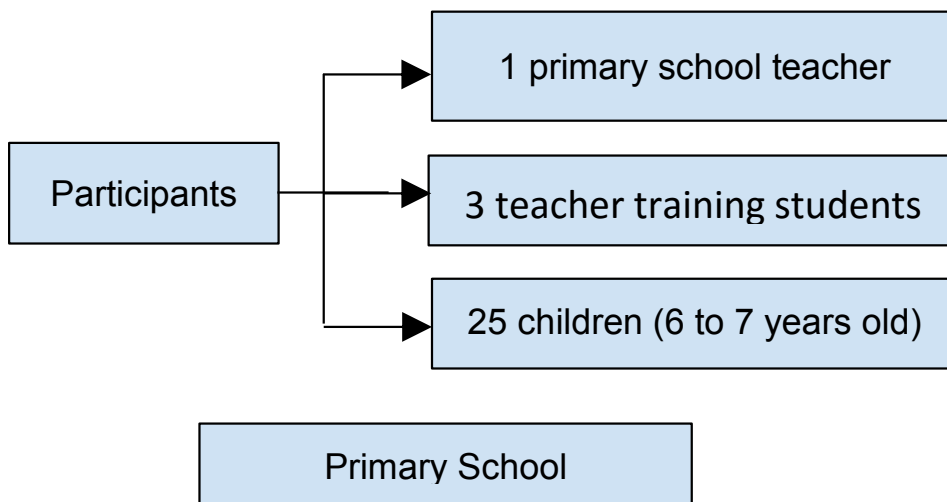
References

- Dewey, J. (1938). *Experience & Education*. New York, NY: Kappa Delta Pi.
- Kolb, D.A. (1984). *Experiential Learning: Experience as the Source of Learning and Development*. Englewood Cliffs: Prentice-Hall.
- Massari, G. (2014). *Theory and Methodology of Instruction*, pp. 3-97, in *Manual for Pedagogy of Preschool and Primary School Education*, Iași: Alexandru Ioan Cuza University Publishing House.
- Massari, G. (2013). Best practices in outdoor education, in *4D in Education*, Iași: European Institute.
- Sălăvăstru, D. (2016), *Experiential Learning in early education*. In *Early education – problems and solution*. Stan L. (coord.), Editura Polirom, Iași

7.11. WIND POWER

**Zeynep ALAT⁵⁰,
Ege University, Turkey
Kazim ALAT⁵¹,
Ondokuz Mayıs University, Turkey**

Context and participants



Pedagogical approaches

Science is a natural part of children's lives as anything in their environment becomes the target of their curious eyes since they first open. As children interact with objects and people in their surroundings they seek answers, raise questions, experiment, evaluate their findings, and develop theories. Inevitability of making errors and facing contradictory experiences makes children engage in a constant revision of their theories. New experiences are built on previous ones. This unquenchable thirst for learning and gaining new

⁵⁰ zeynep.alat@gmail.com

⁵¹ kazim.alat@gmail.com

skills in young children provides infinite opportunities for caring adults to help children in their journey to better comprehend the world.

It is now a widely accepted fact that quality early science experiences would ensure preservation of this positive attitude and disposition towards science and learning displayed by young children paving the ways for future scientific interest and thinking, and academic success. Within this understanding, it is well acknowledged that children are to be surrounded by a stimulating environment rich in materials and resources, choices, and activities that support children in their construction of both physical and logical-mathematical information as well as social one. Children are active in their learning rather than being kept as passive pupils strongly depended on adults to acquire knowledge. Rather, teachers take the role of a facilitator who prepares the educational environment, constantly evaluates children's development and learning to see where they are, provides real life experiences based on individual child's needs and interests, and supports them in their social interactions.

Teaching and learning experience (description)

Our commitment to conceptualization of children as young scientists led us to look for real life opportunities that would instigate much curiosity in children. We did not have to wait long as strong lodos winds (southwest wind) paid a visit to our coastal city making it a challenge to walk let alone play outside. Inevitably, it was the wind that dominated the conversations of students in that fourth grade class. Not wanting to miss on that perfect opportunity, we decided to provide a worthwhile science experience for children. Starting with a desire to respond to their curiosity about the speed of the lodos, as they amused us with their rather engaged discussions about it, we decided to give children a chance to learn about how to measure the speed of the wind. Then, we found ourselves learning about and, in fact, making our own anemometers. Working in small groups, the children not only had a chance to improve their social skills, but also were engaged in scientific processes including hypothesizing, making observations, data collection, measuring, and evaluation.

Planning of the experimental work

1st Step:

Materials (per team):

- 4 plastic cups
- pencil with eraser
- play dough
- cardboard
- staple

- push pin
- scissors
- ruler
- balloon
- A4 paper

We divided the class into six teams, containing four students in each team. We provided each team with materials and a work space. Students examined the materials and then discussed what the materials are, what can be done using the materials.

Children answered:

- We will make a project (Rıza)
- we can make a phone (Eren)
- it can be clock (Berra)
- we can prepare puppet (Berfin)
- we can make a propeller (Ece)
- maybe fan (Sare)
- I think it can be castle (Tunahan)

2nd Step: In this step we gave students written instructions to help them through the steps of constructing the anemometer. First they started to cut two same-size cardboard strips. Then they crossed the cardboard strips to make a plus sign. Using a ruler they measured the cardboard strips and found and marked the middle of each strip. Next, they stapled them together in the middle, where they cross, to be sure the anemometer blades are of equal length. After they used the rulers to measure the blades and located the exact center. They marked one direction of strip. Later, students cut mouth of the plastic cups to make them lighter.



3rd Step: Then they stapled plastic cups on edge of the strips facing in the same direction. After attaching plastic cups, they pushed the pushpin through the center of the cardboard cross and attached it to the eraser point of the pencil. They blow on the cups to make sure the cardboard blades spin freely on the pin. After finishing this step they

put play dough on the table then they fasten other side of pencil with play dough. We gave them balloon to make wind and asked them to blow balloons in different sizes then to release the air into the plastic cups. We gave children A4 paper to note measurement results of their experiment, to write how many times wind gauge turned in different sized balloons. Later, we used a portable fan and repeated the experiment.



Main Finding or discussion

4th Step: After the experiment we discussed about the wind gauge. We asked them:

- What is a power that allowing the rotation of cup?
-Of course wind (Ege)
- What will happen if we close mouth of the cups?
-Wind gauge will not turn.(Rıza)
-It will not move.(Hüseyin)
- Have you ever seen something like this?
-Yes, I saw it on TV (Sefa)
-I saw this on the street (Kardelen)
- What is the benefit to know blowing speed of wind?
-We can produce electric energy (Gülçin)
-It can help clothes to dry faster (Eren)

Reflection

Children had a great time and they enjoyed as they said. When we gave them materials they were so excited and curious. We planned to go outside to do our experiment but there was not wind at the time of experimentation. We decided to stay inside the building and used balloons to generate wind power. Later, we used a portable fan and repeated the experiment. Another problem was stapling strips and cups, some of groups stapled cups wrong side and wrong direction. With the help of their friends for other teams they quickly found out what was the problem with their anemometer.

Using in other contexts and age groups

- Students may take their anemometers outside on a windy day, or over multiple days, to measure the wind speed.
- By taking measurements at different times and days, students can prepare a chart displaying wind speed at different times.
- Students can measure the wind speed at different locations, such as in narrow hallways or an open playing field.

References

- Kamay, P., & Kesker,S. (2013). *Ilk fen deneylerim*. Ankara: SMG Yayıncılık, pp:100-101.

PART D.

Chapter 7.

INSTEAD OF CONCLUSIONS

REFERENCES

- Amante L. (2007). *The ICT at Elementary School and Kindergarten: reasons and factors for their integration*. Sísifo/educational sciences journal·no.3.
- Andersson, K. & Gillberg, A. (2014). What is science in preschool and what do teachers have to know to empower children. *Cutlural Studies of Science Education* 9, 275.
- Athanasios S. Drigas, and Georgia K. Kokkalia, (2013), *ICTs in kindergarten*. iJET – Volume 8, Issue 2.
- Biesta, G. (2013). *The Beautiful risk of Education*, USA: Boulder.
- Bilton, H. (2010). *Outdoor learning in the early years: Management and innovation* (3.baskı). NY: Routledge.
- Binkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M., & Rumble, M. (2010). *Defining 21st century skills*. Melbourne: University of Melbourne.
- Binkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M., Miller-Ricci, M., & Rumble, M. (2012). Defining 21st century skills. In: Griffin, P., McGaw, B., & Care, E. (Eds.), *Assessment and teaching of 21st century skills*. Dordrecht: Springer.
- Bowman, B.T., S. Donovan, & M.S. Burns. (2000). *Eager to learn: Educating our preschoolers*. Washington, DC: National Academies Press.
- Bredekamp, S. (2004). Standards for preschool and kindergarten mathematics Education. In D. H. Clements, J. Sarama & A. M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp. 77–82). Mahwah, NJ: Lawrence Erlbaum Associates.
- Brundtland, G.H., *Our common Future*, Unesco Paris 1987.
- Bruner, J. (1984). Orígenes de las estrategias para la resolución de problemas. In J. Bruner, *Acción, Pensamiento y lenguaje* (pp. 129-147). Madrid: Alianza.
- Bruner, J. (1997). *Actos de Significado: para uma psicologia cultural*. Lisboa: Edições 70.
- Bruner, J. (1998). *O Processo da Educação*. Lisboa: Edições 70.
- Bruner, J. (2000). *Cultura da Educação*. Lisboa: Edições 70.
- Bruner, J. S. (2008). *Actos de Significado*. Edições 70.
- Bruner, J. S. (2015). *O Processo da Educação*. Edições 70.
- Bullard, J. (2014). *Creating Environments for Learning: Birth to age Eight*. 2 nd ed. Upper Saddle River, NJ: Pearson.
- Buysee, V., Wesley, P. W., & Keyes, L. (1998). Implementing early childhood inclusion: Barrier and support factors. *Early Childhood Research Quarterly*, 13, 169-184.
- Cadwell, L. (1997). *Bringing Reggio Emilia Home: An Innovative Approach to Early Childhood Education*. New York: Teachers College Press.
- Cope, B. & Kalantzis, M. (2013). Towards a new learning: The Scholar social knowledge workspace, in theory and in practice. *E-Learning and Digital Media* 10, 332-356.

- Copple, C., & Bredekamp, S. (2009). *Developmentally appropriate practice in early childhood programs serving children birth through age 8* (Third ed.). Washington, DC: NAEYC.
- Delors, J. (1996). *Learning the treasure within*, Unesco Paris.
- Dewey, J. (1910). *How We Think*. Boston: D.C. Heath & Co, Publishers. Retrieved from <http://archive.org/details/howwethink000838mbp>
- Dewey, J. (1916). *Democracy and Education: An introduction to the Philosophy of Education*. New York: MacMillan.
- Dewey, J. (1929). *The sources of a science of education*. New York: Horace Liveright.
- Dewey, J. (1938). *Experience & Education*. New York, NY: Kappa Delta Pi.
- Dewey, J. (1953). *Como Pensamos*. São Paulo: Companhia Editora Nacional.
- Dewey, J. (1971). *Experiência e educação*. São Paulo: Companhia Editora Nacional.
- Dewey, J. (2001). *Democracy and Education*. Hazleton: The Pennsylvania State University - Electronic Classics Series, Jim Manis, Faculty Editor.
- Dewey, J. (2002). *A escola e a sociedade e A criança e o currículo*. Lisboa: Relógio D'Água Editores.
- Dewey, J. (2007). *How We Think*. Digireads.com. Obtido de <http://www.amazon.com/How-We-Think-John-Dewey/dp/1420929976>
- Draxler, A. (2010) *The Delors commission and report*, Norrag website 2010.
- Duyvendak, J.W. (2013). *Nieuw nationalisme in Nederland*, lecture UvA, Amsterdam.
- Edwards, C., L. Gandini & G. Forman (eds.). 1998. *The hundred Languages of Children*. Reggio Emilia.
- Epstein, A. (2007). *The Intentional Teacher: Choosing the Best Strategies for Young Children's Learning*. Washington, DC: National Association for the Education of Young Children.
- Epstein, A. (2008). *Understanding High/Scope Curriculum "Content Areas" and "KDIs"*. Obtido de HighScope, Resource Reprint: <http://www.HighScope.org>
- Fei, G. J. (1995). *Kindergarten teachers' beliefs and practices: Assessing teachers' use of developmentally appropriate practice in Massachusetts*. Unpublished doctoral dissertation, University of Massachusetts, Amherst.
- Fjoroft, I. & Sageie, J. (2001). *The natural Environment as a playground for children: the impact of outdoor play activities in pre-primary school children*, *Early Childhood Education Journal* 29 (2): 111-117.
- Folque, A. (2012). *Aprender a Aprender no Pré-Escolar: O modelo pedagógico do movimento da escola moderna*. Lisboa: Fundação Calouste Gulbenkian.
- Forman, G. (1996). *The Project approach in Reggio Emilia*. In C.T. Fosnot (Ed.). *Constructivism: Theory, Perspectives and Practice*. New York: Teachers College Press. 172-181.
- Gambôa, R. (2004). *Educação, ética e democracia: a reconstrução da modernidade em John Dewey*. Porto: Edições ASA.

- Gandini, L. (1993). Fundamentals of the Reggio Emilia approach to early childhood education. *Young Children* 49.1. 4-8.
- Gandini, L. L. Hill, L. Cadwell & C. Schwall (eds.). (2005). *In the Spirit of the Studio. Learning from the Atelier of Reggio Emilia*. New York/ London: Teachers College Columbia University.
- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*, Basic Books.
- Gardner, H. (1993). *Multiple intelligences: The theory in practice*. Basic Books.
- Gardner, H. (1999). *Intelligence reframed: Multiple intelligences for the 21st Century*. Basic Books.
- Gardner, H. (2004). *Changing Minds: The art and science of changing our own and other people's minds*. Harvard Business School Press.
- Gardner, Howard (2006). *Multiple Intelligences: New Horizons in Theory and Practice*. Basic Books.
- Gardner, H. (2006). *Multiple Intelligences: New Horizons in Theory and Practice*. Basic Books.
- Gentry, James W. (1990), *What is experiential learning?*, chapter 2 from *Guide to Business Gaming and Experiential Learning*;
- Gomes, M. J. (1983). *Um dois três planeta n.º 20. Um jogo de esconde-esconde espacial*. Lisboa: Moraes.
- Hayes, C.D., J.L. Palmer, & M.J. Zaslow, eds. (1990). *Who cares for America's children: Child care policy for the 1990s*. Washington, DC: National Academy Press.
- Hewett, V. (2001). Examining the Reggio Emilia Approach to Early Childhood Education. *Early Childhood Education Journal* 29.2. 95.110.
- Honwana, A. (2012). *"Waithood", youth transitions and social change*, Rotterdam 2012.
- Hohmann, M. & Weikart, D. (2007). *Educar a Criança*. Lisboa: Fundação Calouste Gulbenkian.
- ISTE, on <http://www.iste.org>
- Jacobsen, D., Eggen, P., & Kauchak, D. (2006). *Methods for teaching: Promotion student learning in K-12 classrooms*. Pearson.
- Kamii, C.; Devries, R. (1988). *O conhecimento físico na educação pré-escolar – implicações da teoria de Piaget*. Porto Alegre: Artes Médicas.
- Kendrick, M., Jones, S., Mutonyi, H., Norton, B. (2006). Multimodality and English education in Ugandan schools. *English Studies in Africa* 49.1, 95-114.
- Knoll, M. (1996). Faking a dissertation: Ellsworth Collings, William H. Kilpatrick and the "project curriculum". *Journal of Curriculum Studies* 28, no. 2, pp. 193-222.
- Knoll, M. (1997). The Project Method: Its Vocational Education Origin and International Development. *Journal of Industrial Teacher Education* 34, 59-80.
- Kolb, D. A. & Fry, R. (1975). *Toward an applied theory of experiential learning*. in C. Cooper (ed.), *Theories of Group Process*, London: John Wiley.
- Kolb, D. A. (1976). *The Learning style inventory: Technical manual*. McBer & Co, Boston, MA.

- Kolb, D. A. (1981). Learning styles and disciplinary differences. *The modern American college*, 232-255.
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development* (Vol. 1). Englewood Cliffs, NJ: Prentice-Hall.
- Kolb, D. (2007). *Experiential Learning Cycles. Act, Reflect, Conceptualize, Apply*.
- Kolb, D., A., (2014) *Experiential Learning: Experience as the Source of Learning and Development*. USA: Pearson Education.
- Landry, Pierre (2005), *Retour sur le Cycle de Kolb*;
- Ledward, B. C., & Hirata, D. (2011). *An overview of 21st century skills*. Summary of *21st Century Skills for Students and Teachers*, by Pacific Policy Research Center. Honolulu: Kamehameha Schools–Research & Evaluation.
- Lockhart, S. (2011). Active Learning for Infants and Toddlers: Even the youngest children actively engage the world around them. *HighScope ReSources*, 5-10.
- Martins, I., Veiga, M. L., Teixeira, F., Tenreiro-Vieira, C., Vieira, R. M., Rodrigues, A. V., Couceiro, F. e Pereira S. (2009). *Despertar para a ciência – actividades dos 3 aos 6*. Lisboa: Ministério da Educação, Direcção-Geral de Inovação e Desenvolvimento Curricular.
- Martins, I., Veiga, M. L., Teixeira, F., Tenreiro-Vieira, C., Vieira, R. M., Rodrigues, A. V. e Couceiro, F. (2006). *Educação em Ciências e Ensino Experimental – Formação de Professores*. Lisboa: Ministério da Educação, Direcção-Geral de Inovação e Desenvolvimento Curricular.
- Marzano & Heflebower (2012)., *Klaar voor de 21e eeuw*, Vlissingen 2012, translation of 'Teaching and Assessing 21st century skills', USA: Bloomington.
- Marzano, R.J., & Heflebower, T. (2013). *Klaar voor de 21e eeuw. Vaardigheden voor een veranderend wereld*. Rotterdam: Bazalt.
- Massari, G. (2014). *Theory and Methodology of Instruction*, pp. 3-97, in *Manual for Pedagogy of Preschool and Primary School Education*, Iași: Alexandru Ioan Cuza University Publishing House.
- Massari, G. (2013). Best practices in outdoor education, in *4D in Education*, Iași: European Institute.
- McMullen, M. B. (1999). Characteristics of teachers who talk the DAP talk and walk the DAP walk. *Journal of Research in Childhood Education*, 13, 216-23.
- McMullen, M. B., Alat, K. (2002). Education matters in the nurturing the beliefs of preschool caregivers and teachers. *Early Childhood Research & Practice*, 4.
- Monkevičienė O. et al. (2014) *Ikimokyklinio amžiaus vaikų pasiekimų aprašas*, Švietimo ir mokslo ministerijos švietimo aprūpinimo centras.
- Niza, S. (2013). O Modelo Curricular de Educação Pré-Escolar da Escola Moderna Portuguesa. In J. Oliveira-Formosinho. (Org.). *Modelos Curriculares para a Educação de Infância – Construindo uma praxis de participação* (pp. 141-160). Porto: Porto Editora.
- Nóvoa, A.; Marcelino, F., & Ramos do Ó, J. (Org.) (2012). *Sérgio Niza, escritos sobre a educação*. Lisboa: Edições tinta-da-china, Lda.
- Nussbaum, M. (2010). *Niet voor de winst*, Amsterdam 2011, translation of *Not for Profit*, USA: Princeton.

- Piaget, J. (1970). *Science of education and the psychology of the child*. New York: Viking Compass.
- Piaget, J.; Greco, P. (1974). *Aprendizagem e conhecimento*. São Paulo: Freitas Bastos.
- Piaget, J (1978). *A psicologia da inteligência*. Lisboa: Livros Horizonte.
- Piaget, J. (1983). *Seis Estudos de Psicologia*. Lisboa: Dom Quixote.
- Pinazza, M. A. (2007). John Dewey: inspirações para uma pedagogia da infância. In J. Oliveira-Formosinho, T. M. Kishimoto, & M. A. Pinazza, *Pedagogia(s) da Infância*:
- Peperzak, A. T. (1978). *Het menselijk gelaat*, essays van Emmanuel Lévinas, Baarn.
- Priest, Simon, (1986), *Redefining Outdoor Education: A Matter of Many Relationships*, In *Journal of Environmental*.
- Rinaldi, C. 2006. *In Dialogue with Reggio Emilia. Listening, Researching and Learning*. London/ New York: Routledge.
- Robertson, J. (2014). *Creativity outdoors in the early years. Ideas suggestions and activities*. Creative STAR learning company.
- Robertson, J. (2014). *Maths outdoor in the early years. Ideas, suggestions and activities*. Creative STAR learning company.
- Rogers, C. & Freiberg, J.H. (1994) *Freedom to Learn*. New York: Merrill.
- Rousseau, J.-J. (1973), *Emil sau despre educație*. București: Editura Didactică și Pedagogică
- Saavedra, A.R., & Opfer, V.D., (2012) *Teaching and Learning 21st Century Skills: Lessons from the Learning Sciences*. RAND Corporation
- Sarama, J. & DiBiase, A. M. (2004). The professional development challenge in preschool mathematics. In D. H. Clements, J. Sarama & A. M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp. 415-446). Mahwah, NJ: Lawrence Erlbaum Associates.
- Sălăvăstru, D. (2016), *Învățarea experiențială în educația timpurie*. In *Educația timpurie – probleme și soluții*, Stan L. (coord.), Editura Polirom, Iași.
- Schwartz, M., *The learning and teaching office*;
- Schweinhart, L. J. & Weikart, D. (2010). The HighScope Model of Early Childhood Education. In J. Roopnarine & J. E. Jonhson, *Approaches to Early Childhood Education* (pp. 191-212). Upper Saddle River, NJ: Merril.
- Smidt, S. (2011). *Introducing Bruner: a guide for practitioners and students in early years education*. London: Routledge.
- Stipek, Deborah, & Byler, Patricia. (1997). Early childhood education teachers: Do they practice what they preach? *Early Childhood Research Quarterly*, 12(3), 305-325.
- Strauss, S. (1996). *The Passionate Fact: Storytelling in Natural History and Cultural Interpretation*. Golden, CO: North American Press.
- Șoitu, L., (2006), *Strategii educaționale centrate pe elev*, București: Tipografia Alpha Man.
- Trilling, B. & Fadel, F. (2009). *21st Century skills, learning for life in our times*, San Francisco : Jossey-Bass.
- Voogt, Joke & Roblin, Natalie Pareja (2010). *21st century skills, discussienota*, Enschede: Universiteit Twente, The Netherlands.

- Vries, G.J. de, (2014). *Prise, tool for assessment and evaluation in ESD*, in Learning Teacher Magazine 3-4, Sweden.
- Vries, G.J. de (2007). *Terug naar de jaren vijftig, vernieuwde kerndoelen voor het geschiedenisonderwijs*, in Kleio juni 2007.
- Vygotsky, L.S. (1962). *Thought and Language*. Cambridge, MA: MIT Press.
- Vygotsky, L. (1991). *A Formação Social da Mente*. São Paulo : Martins Fontes.
- Wagner, T. (2008). *The global achievement gap: Why even our best schools don't teach the new survival skills our children need—and what we can do about it*. New York, NY: Basic Books.
- Wals, A. (2012). *Shaping the education of Tomorrow*, Unesco Paris.
- Westbrook, R. B. (1993). John Dewey. *Prospects: the quarterly review of comparative education*, XXIII: 1\2, 277-91.
- Wilson, R. (2008). *Nature and young children: Encouraging creative play and learning in natural environments*. New York: Routledge.
- Wurdinger, S.D. & Carlos J. A. (2010). *Teaching for experiential learning*.
- Zant, J. van der, e.a. (2012). *Wereldburger met Ketchup*, Amsterdam.
- ***, Assessment and Teaching of 21st Century Skills. (Undated). What are 21st century skills? Retrieved March 28, 2012, from <http://atc21s.org/index.php/about/what-are-21st-century-skills/>
- ***, European Commission/EACEA/Eurydice/Eurostat. (2014). *Key Data on Early Childhood Education and Care in Europe*. 2014 Edition. Eurydice and Eurostat Report. Luxembourg: Publications Office of the European Union.
- ***, HighScope Educational Research Foundation (2003). *High/scope Child Observation Record (cor) For Ages 2 1/2 - 6*. Ypsilanti, Michigan: HighScope Press.
- ***, HighScope Educational Research Foundation (2005). *Child Observation Record (COR): Information for Decision Makers*. Ypsilanti, Michigan: HighScope Press.
- ***, *The Educational Tasks and Content of the Steiner Waldorf Curriculum* ed. by Martyn Rawson and Tobias Richter, Waldorf Resource Books No.4, 2000.
- ***, (2015). *Lyderių forumo "Sėkmės istorijos" pranešimų rinkinys*, Kauno pedagogų kvalifikacijos centras, 2015.
- NRC.NL (2007), *Maxima: 'Nederlandse identiteit nog niet ontdekt'*, NRC website 2007.
- NRC. (1996). *National science education standards*. Washington, DC: National Academy Press.
- NRC.NL, *de multiculturele samenleving*, NRC website 1995-2001.
- ***, *Waldorf Education: exhibition catalogue, on occasion of the 44th session of the International Conference on Education of UNESCO in Geneva*, Freunde der Erziehungskunst Rudolf Steiners e.V., Stuttgart, 1994.

E-references

- Aberdeen city outdoor. *Outdoor Nurture Project*, Aberdeen City Council 2011. Link on the internet: <http://creativestarlearning.co.uk/wp-content/uploads/2015/06/Aberdeen-City-Outdoor-PLODS.pdf>.
- Oetelaar, Frank van der (2012), *Modellen voor 21st eeuwse leren* internet 2012 (<http://www.21stcenturyskills.nl/modellen/>)
- Oetelaar, Frank van der, (2012) *21st century skills in het onderwijs, whitepaper versie 1.0*, 2012 (<http://www.21stcenturyskills.nl/whitepaper/>)
- Platform Onderwijs2032, *Ons Onderwijs 2032*, eindadvies, Den Haag 2016.
- Sedlacek, T. (2014). *Economics as an Unorchestrated Orchestrator*, Van der Leeuwlezing Groningen 2014, http://vanderleeuwlezing.nl/sites/default/files/Tekst%20lezing%20Tomás%20Sedláček_0.pdf
- SLO/Tule, *kerndoelen*, website SLO, internet 2009.
- Tarr, P. (2001). Aesthetic codes in early childhood classrooms: what art educators can learn from Reggio Emilia. *Art Education* 54.3. Retrieved from http://www.designshare.com/Research/Tarr/Aesthetic_Codes_1.htm.
- Unece, *Learning for the Future*, Utrecht.
- Wikipedia (2013) *Multiculturalism in the Netherlands*.
- www.entoen.nu, *de canon van Nederland*
- https://www.unhcr.gr/fileadmin/Greece/Extras/education_symbiosis/Symbiosis_project_manual_final.pdf
- http://accesstomedia.org/wp-content/uploads/Documents/youthMADE_PerfectImmigrant_lesson.pdf
- <http://www.pi-schools.gr/download/publications/epitheorisi/teyxos6/deloudi.PDF>
- http://www.i-red.eu/resources/projects-files/scedio_drasis-eisagogi-viomatiki_mathisi.pdf
- <https://refugeesgr.wordpress.com/2016/01/26/%CE%BC%CE%B9%CE%B1-%CE%BC%CE%AD%CF%81%CE%B1-%CF%83%CF%84%CE%BF%CE%BD-%CE%B5%CE%BB%CE%B1%CE%B9%CF%8E%CE%BD%CE%B1/>
- https://www.google.gr/search?q=%CF%80%CF%81%CE%BF%CF%83%CF%86%CF%85%CE%B3%CE%B9%CE%B1+%CF%80%CE%B9%CE%BD%CE%B1%CE%BA%CE%B5%CF%82&espv=2&biw=1366&bih=643&source=lnms&tbm=isch&sa=X&ved=0ahUKEwiNjO2-wLXJAhUBSBQKHUpPCVgQ_AUIBigB#tbm=isch&q=refugees+paintings
- http://www.lifo.gr/articles/society_articles/85362
- <http://www.edbatista.com/2007/10/experiential.html>
- <http://www.science-sparks.com/2015/07/24/three-little-pig-houses/>
- <https://www.kennisnet.nl/about-us/>
- <http://www.tpack.org>

ISBN 978-606-714-309-6

EDITURA UNIVERSITĂȚII "ALEXANDRU IOAN CUZA" DIN IAȘI